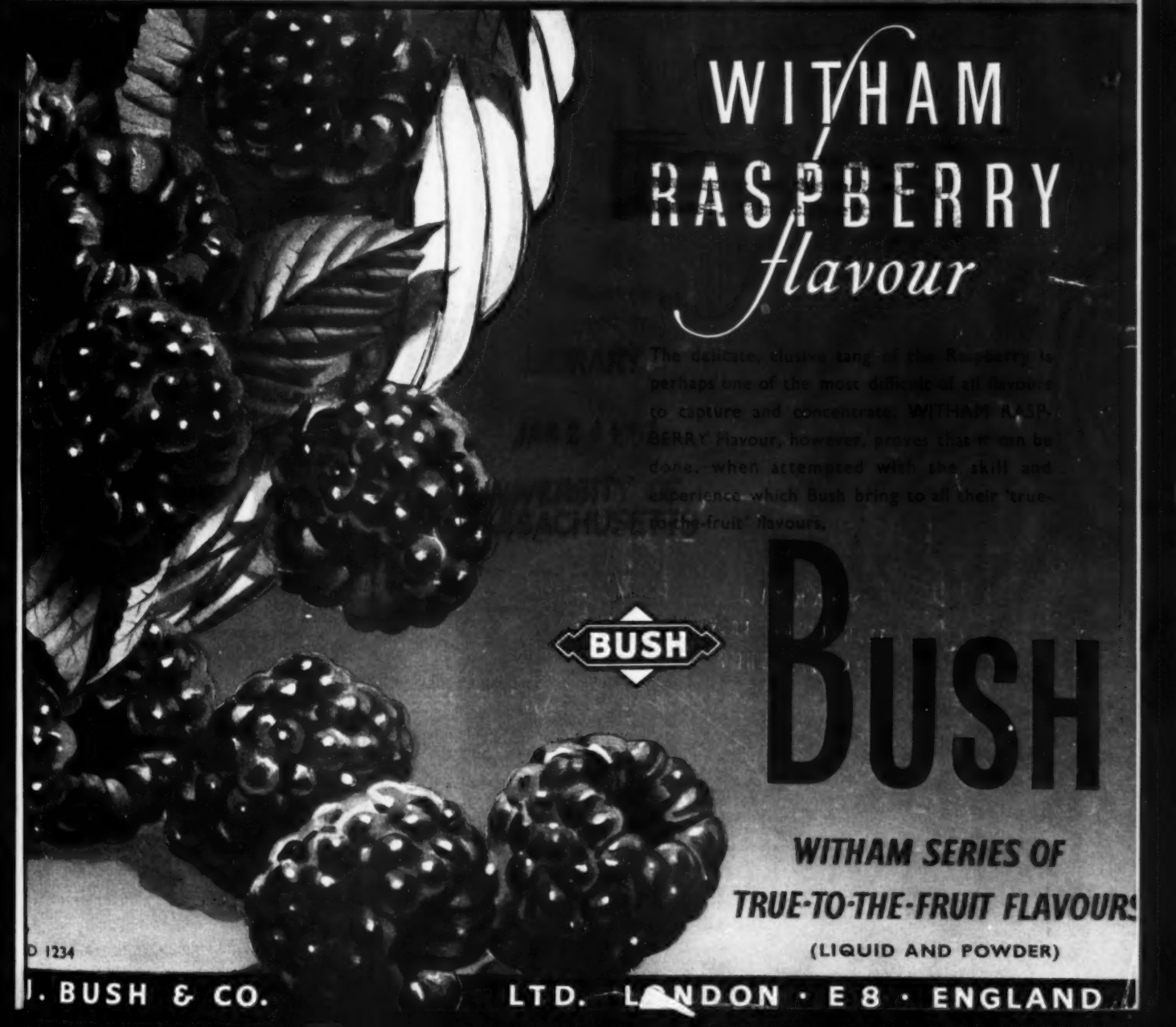
FOOD MANUFACTURE

Incorporating Food Industries Weekly

A PUBLICATION OF THE LEONARD HILL TECHNICAL GROUP JANUARY 1, 1957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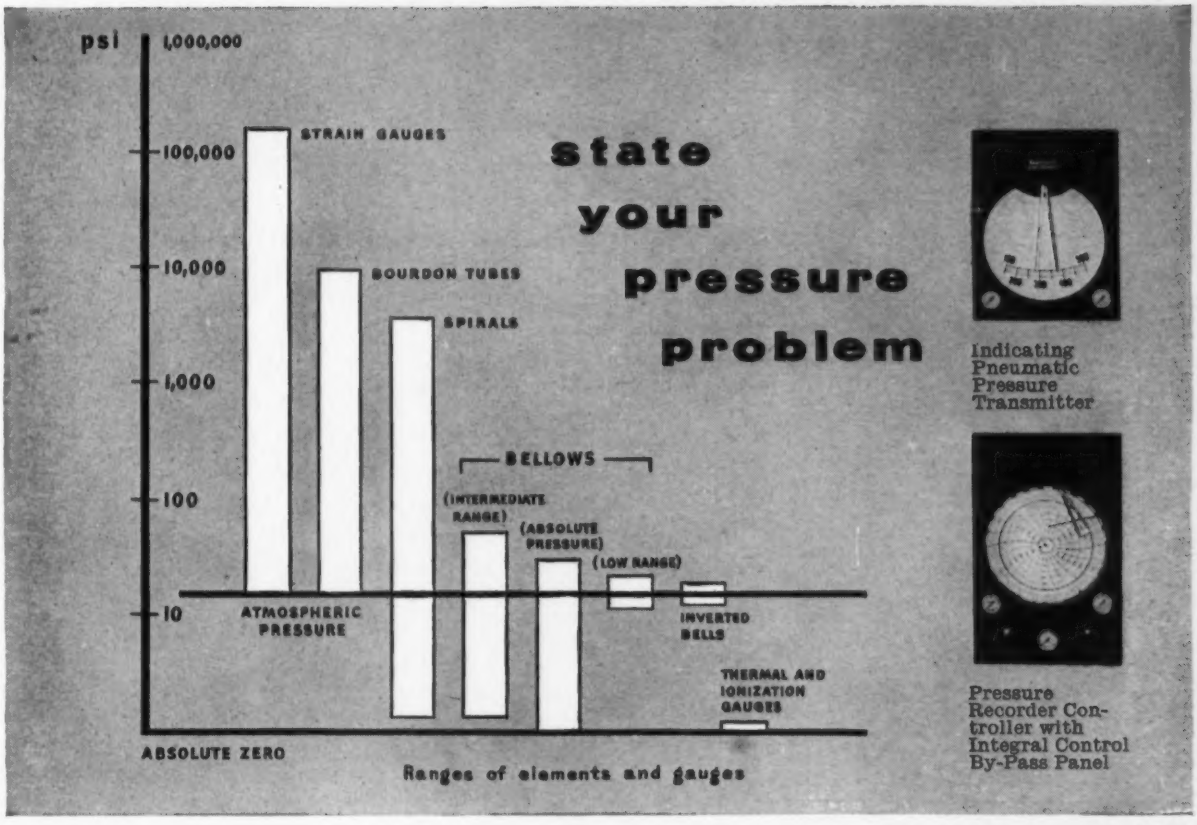

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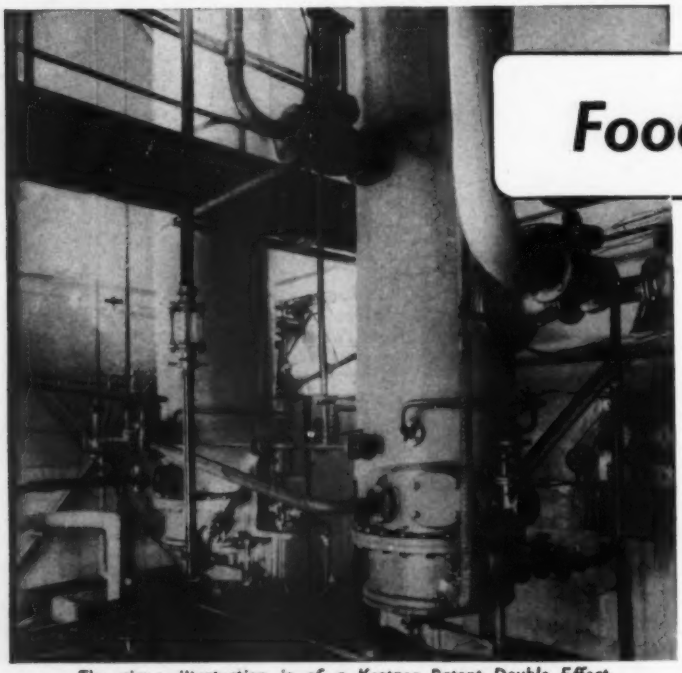

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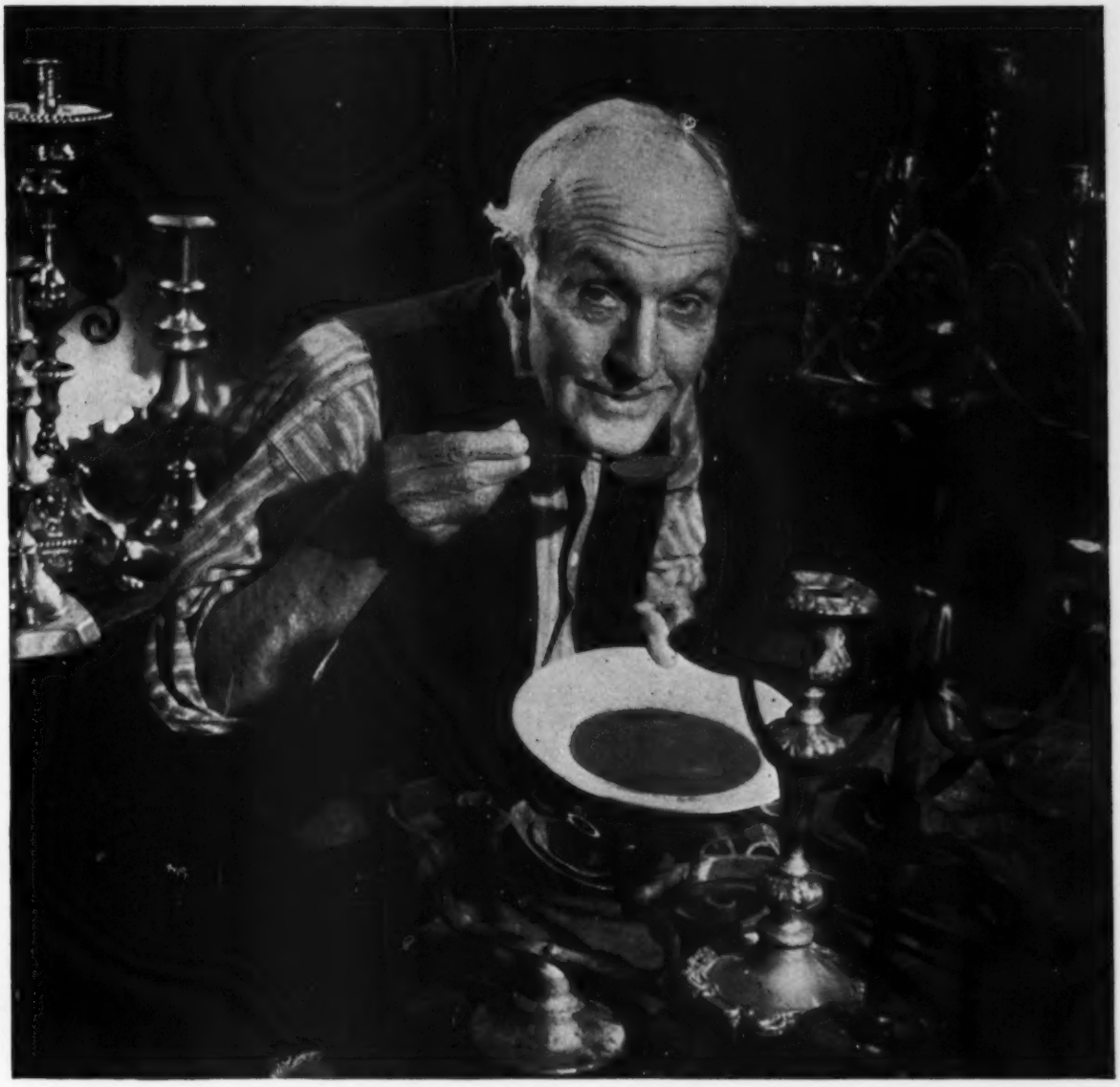

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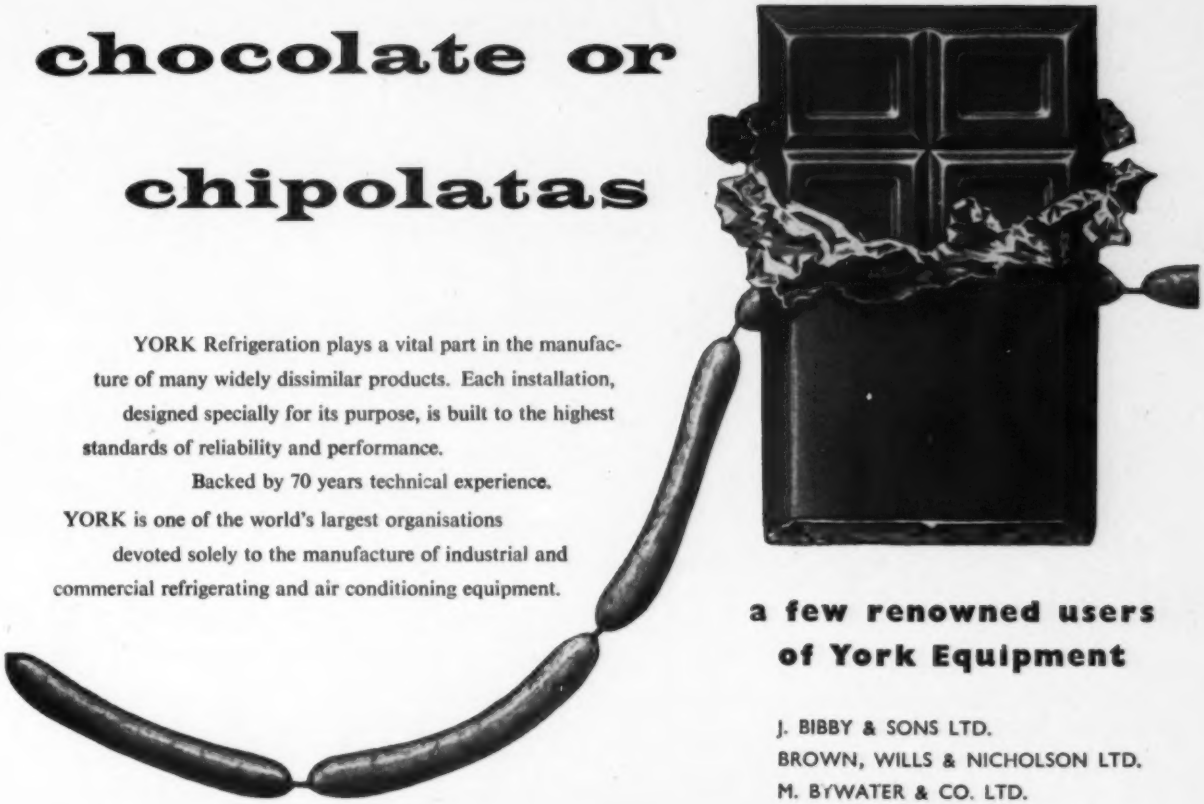

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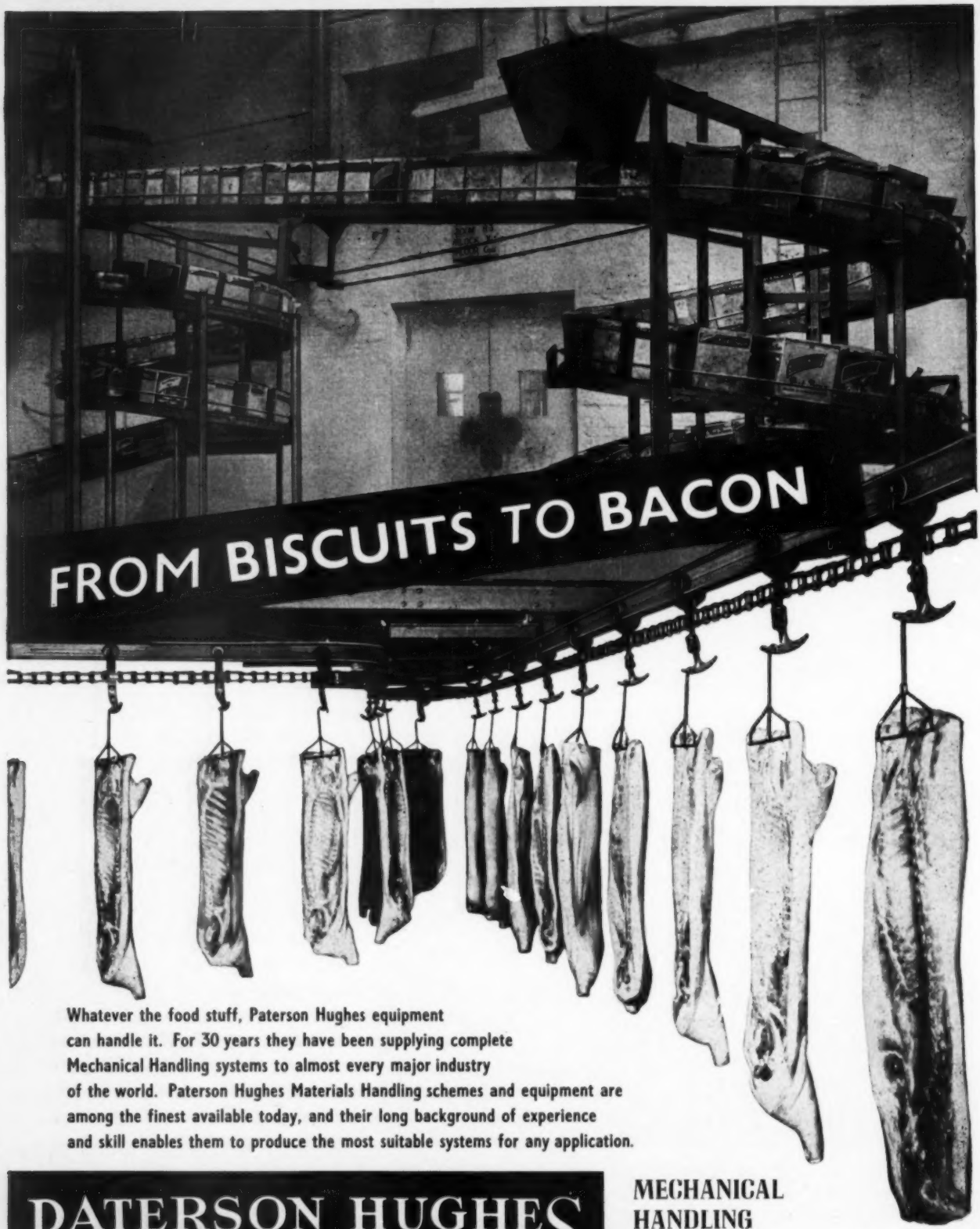

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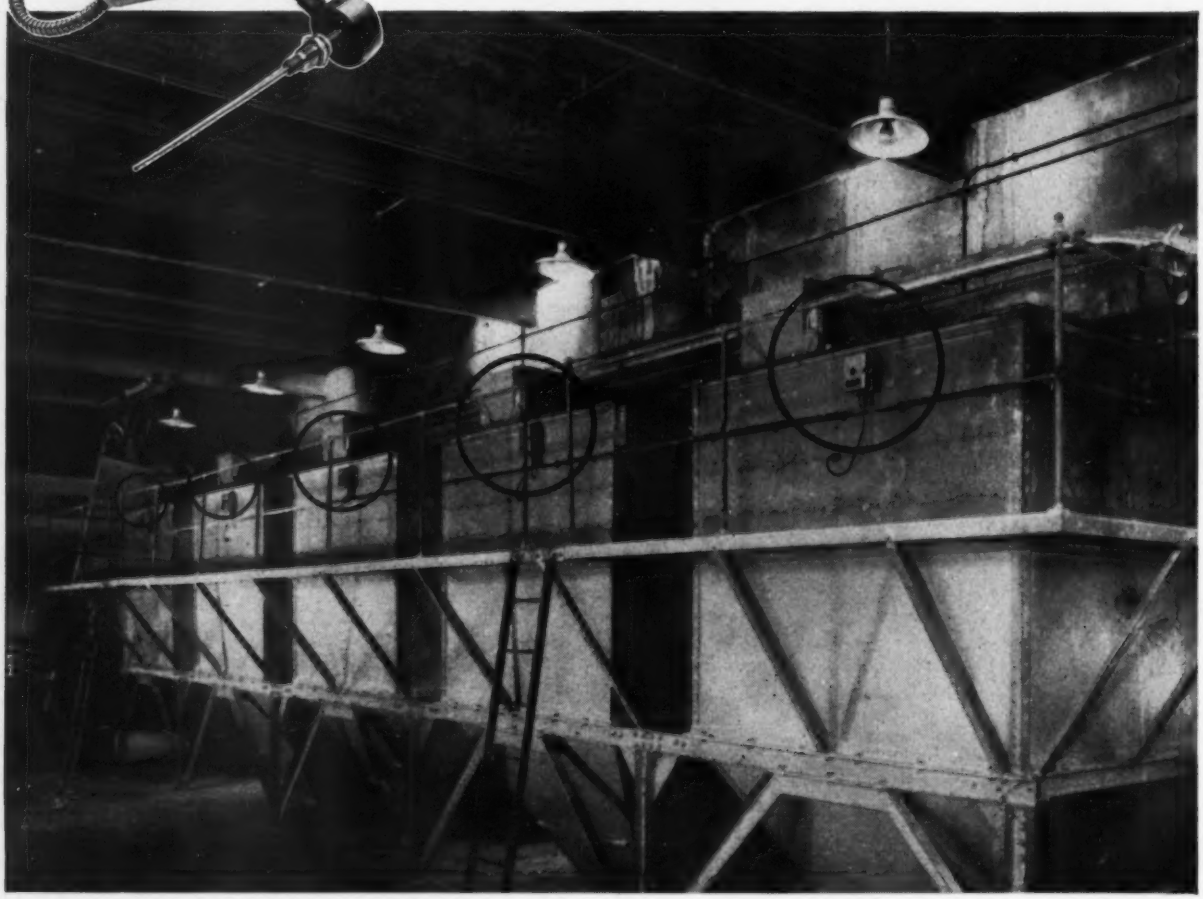

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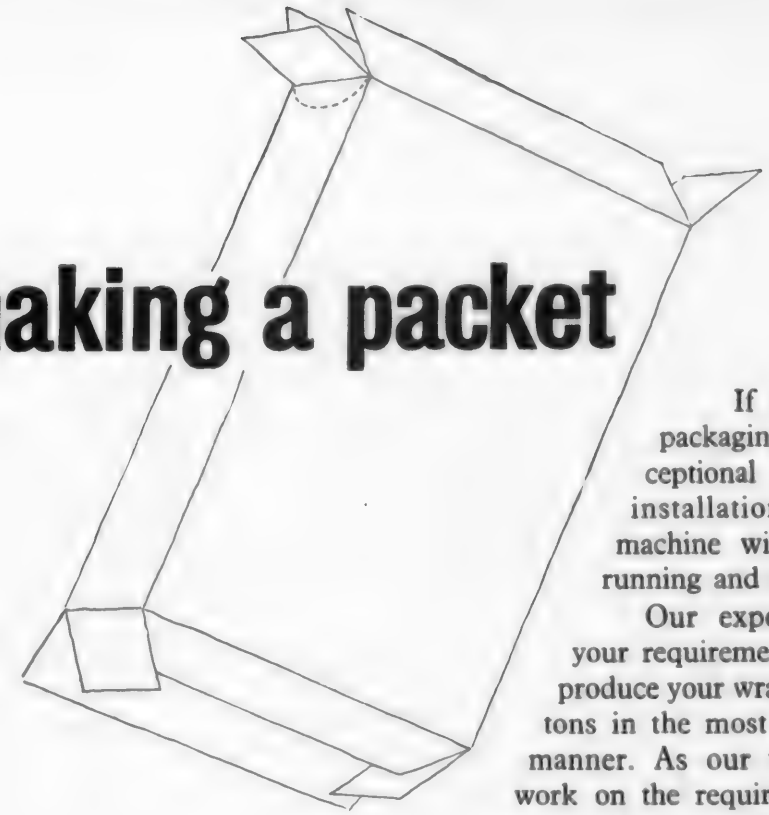

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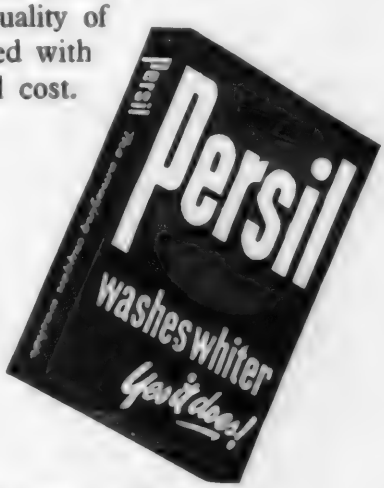

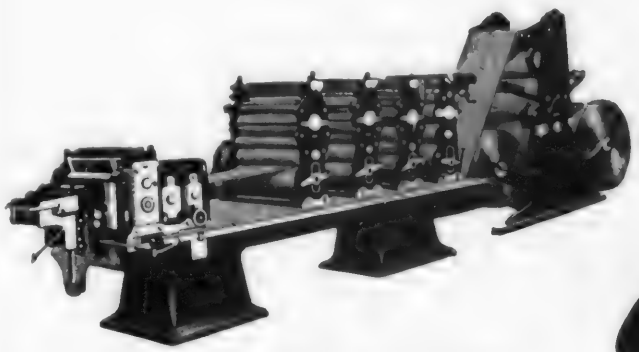

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Introducing our patented Automatic Peel Joiner which allows your Chambon machine to run continuously, reel after reel. Practical demonstrations arranged by appointment.

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THE ADVERTISMENT REPRODUCED BELOW WAS FIRST PUBLISHED IN JANUARY 1956 . . .

Edwin Danks claims no gift of prophecy.

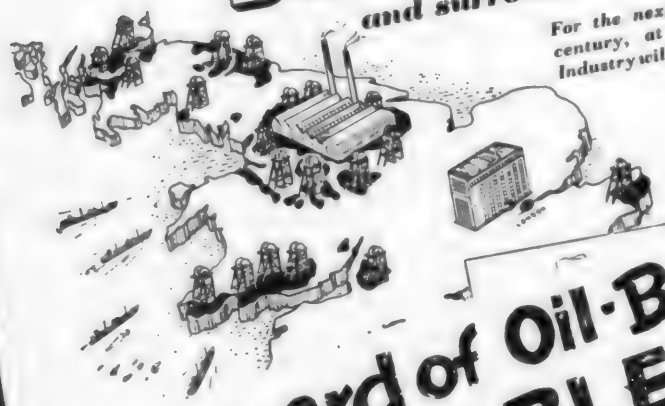
Recent happenings have only given new emphasis to the fact that the Oldbury Stoker, easily installed in existing oil-fired shell boilers, is **YOUR INSURANCE** against an interruption in oil-fuel supplies.

OLDBURY STOKERS ARE READY FOR IMMEDIATE DELIVERY

Built on Coal

and surrounded by Water!

For the next quarter of a century, at least, British Industry will depend on coal.



The Hazard of Oil-Burning or RELIABLE COAL?

...ught. Atomic ...gy on a commercial scale lies in the future; available fuel oil can replace only a small part of Britain's coal consumption, and, every ton of oil must be brought across the oceans and through the narrow seas.

Our native coal is still our cheapest fuel and upon its efficient use rests Britain's prosperity for decades to come.

The Oldbury Chain Grate Stoker — the original and still the most successful stoker for shell type boilers—has proved itself capable of smokeless, efficient, combustion with practically any type of solid fuel. It maintains full boiler output with poor or widely varying fuels and pays for itself speedily by burning efficiently the cheaper, low-grade slacks.

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Tel. (Stoker Division) BRIERLEY HILL 7731

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Messrs. Tate & Lyle make great use of stillages at their Liverpool factory. From packing department to store and despatch these stillages supplied by Rubery Owen provide an uninterrupted flow of movement with speed and safety. Yet another example from our casebook of enterprise in package handling!

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Rubery Owen offer an infinite variety of pallets constructed in all materials to suit all mechanical handling appliances. We also welcome the opportunity of advising and co-operating with the customer on palletisation schemes.
N.B.—Of course, when it comes to handling by fork truck, "Conveyancer" are the people—belonging to the Owen Organisation as we do, and so completing the Owen service for materials handling.

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Cheque enclosed value £.....
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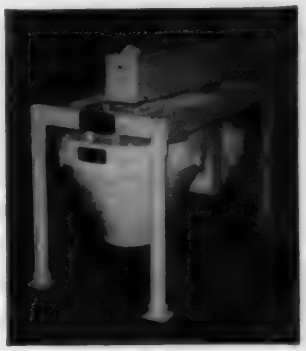

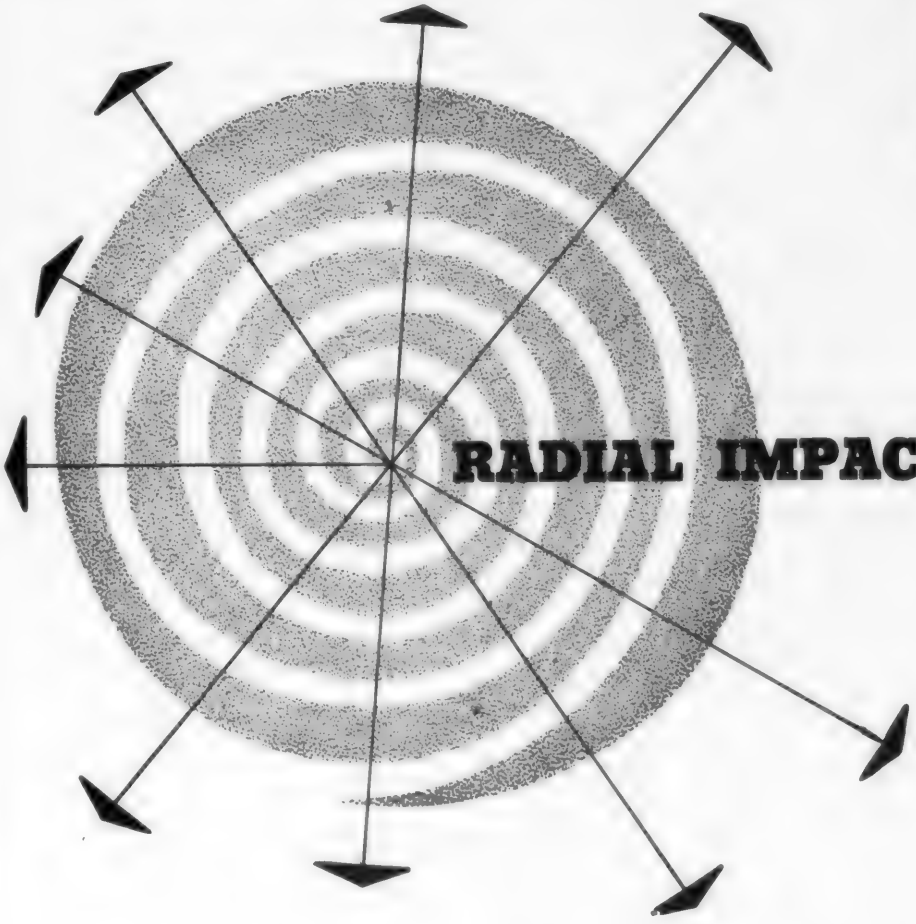

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Particle size reduction through impact is the job of the Entoleter Impact Mill. The material is fed into the centre of a whirling rotor and is hurled radially against impactors which break down the particles with negligible friction.

The speed of rotation governs the degree of reduction and most powdered and granular materials can be ground accurately and without excessive temperature increase.

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Materials now handled include:

starches · sugars · flour · whey powder · liver meal · cotton seed husk salt · feeds · maize · meals · etc.

Tests willingly made on your own samples. Write today for details.

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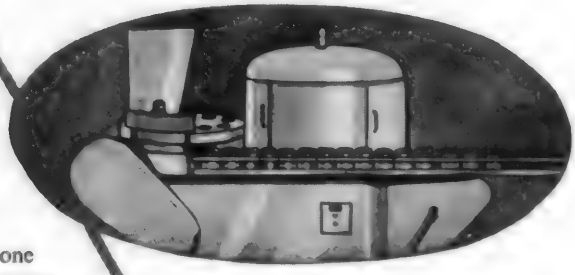
SIMON ENGINEERING GROUP

STOCKPORT, ENGLAND

H.S.283/PS

. . . all along the line there's



It only requires 'trouble' at one point in your production line to cause serious dislocation and loss of valuable production. B.H.C. are geared up to trace the origins of micro-organisms, yeasts and moulds in food processing plant. They are backed by over 25 years experience and have Analytical, Chemical and Bacteriological Laboratories which have not only isolated the causes of trouble, but have pioneered Quaternaries in the form of DECIQUAM to overcome them and prevent their repetition. All you need to do is to write or phone for a B.H.C. Technical Representative to call, why not make a note of the number, LIBerty 1021.

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DECIQUAT An aqueous solution of DECIQUAM which offers the same qualities in a more easily handled form.

'2008' The first completely rinsable 'Quat' in the world, yet still retaining the fullest sterilising qualities.

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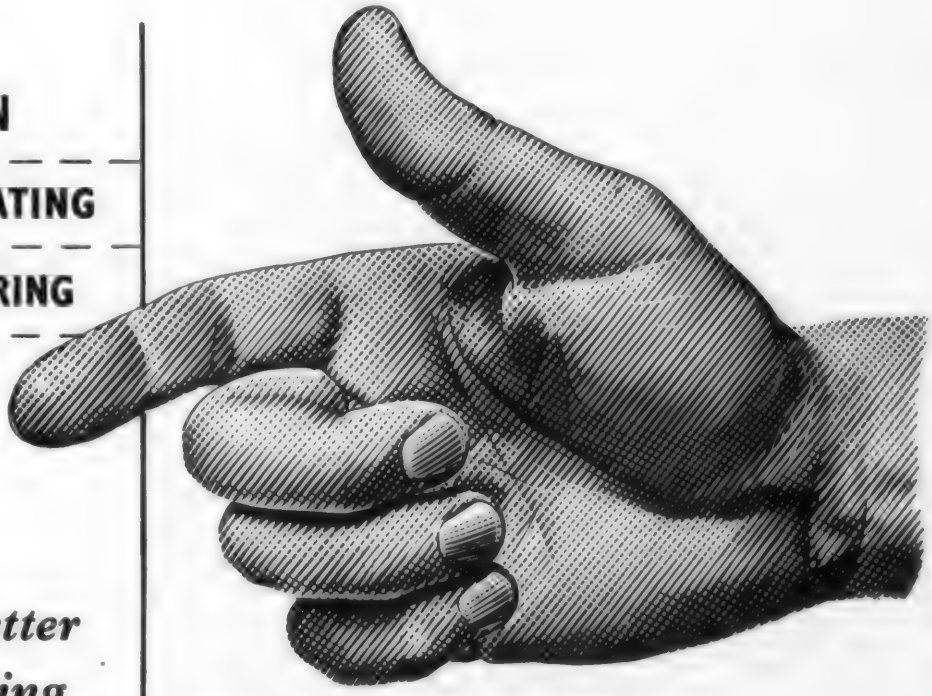
That's no way to plan a lighting installation!

Nothing must be left to chance . . . type of fitting, spacing, mounting . . . quality of distribution . . . total wattage, and individual lighting points.

We'd like to show you the way *we* go about a job.

We'd like to show you some lighting specifications we have prepared. Please call us in and talk it over.



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better lighting by

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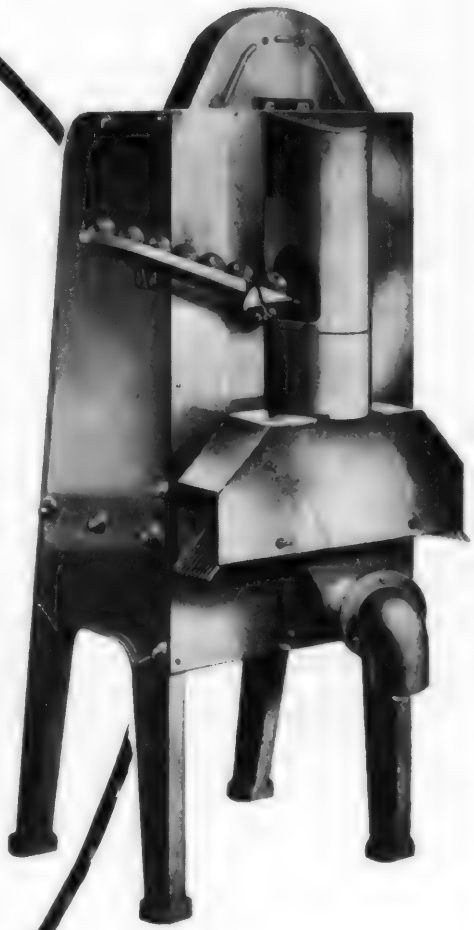
THE WHITE AUTOMATIC QUARTERING, PEELING & PULPING, MACHINE, TYPE D.C.



For oranges, lemons and similar fruit up to 3¾" diameter.

THIS IS THE MACHINE that is used by the principal preserve manufacturers throughout the country. It is a machine that has stood the test of time and there are some still operating today after 25 years service. The latest model has a patented Feeding Device, consisting of an inclined chute and tilting bucket. The bucket automatically delivers one fruit at a time into a knife box where the fruit is cut into quarters. The pulp and pith is then separated from the outer skin, the former passing into a mincer and the latter into a suitable receptacle ready for shredding.

The new feeding device makes it possible for one operator to control two machines simultaneously.

OTHER FEATURES:

- **Skin peeled to any reasonable thickness**
- **Output 60 per minute.**
- **All parts in contact with fruit are manufactured from stainless steel.**

Full details will be sent on request.
A few machines are still available for early delivery.

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a LAMINATION is made by bonding together with adhesive two or more layers of different materials. The moisture-proofness of one may be joined with the strength of another and the appearance of a third. Variations can be made in relative thickness, and the possibilities are both numerous and exciting.

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The knowledge of laminations possessed by Metal Box makes it worth your while to consult them first whenever you are considering whether a lamination may be the kind of packaging material best suited to your product. Write or phone *to-day* to

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Plastics Group
THE LANGHAM · PORTLAND PLACE · LONDON W.1.

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use
TRIPOLAM X
for their successful soup pack

Aluminium foil x paper x aluminium foil—moistureproof, strong, rigid, heatsealable, non-toxic, capable of being printed in multi-colour and/or embossed.

Ask about other Metal Box laminations

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DRIED MALT EXTRACT POWDER

MALT FLOUR

An ever-increasing application to food industries

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FACTORY CEDARS STOWMARKET SUFFOLK

Maltsters for more than a Century

THE FRUITS OF OUR EXPERIENCE

A wealth of experience lies behind these publications—solid experience based on a long and intimate acquaintance with the packaging problems of every kind of trade.

As specialists in transparent packaging materials and makers of the famous "Cellophane" cellulose film, British Cellophane Limited, through world-wide connections, keep their finger on the pulse of packaging: on merchandising trends and techniques, on wrapping methods and machinery. The fruits of this unrivalled fund of knowledge are passed on to manufacturers and retailers in down-to-earth aid and advice, in new and improved films.

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Whatever it is you wash or clean—tins, trays, cans, jars, bottles or the utensils used in the manufacture of food products, DAWSON washing machines provide the most economical and the most hygienic answer to this problem.
Dawson machines are capable of washing large quantities of articles at great speed. The washing process results in a standard of cleanliness which fully satisfies every Health regulation.
Dawson's long experience in the manufacture of washing plant ensures complete dependability of operation year after year.

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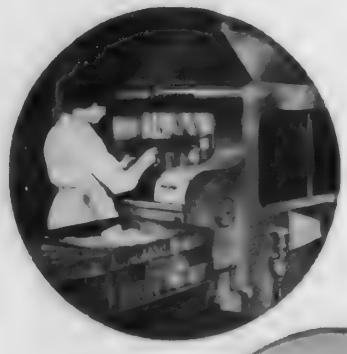
BAKERS TRAYS

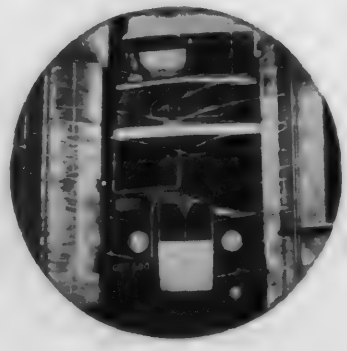


ALL JARS

ALL BOTTLES

DISHES

FISH BOXES



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for CAKES, BISCUITS and WAFERS

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Their purity is protected by delivery in sealed packages.

" Certified " supplies of many are available for food processors exporting to the United States.

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Goodness—from Key Glass containers

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ON QUALITY

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Cheaper filling with the GARDA CAP

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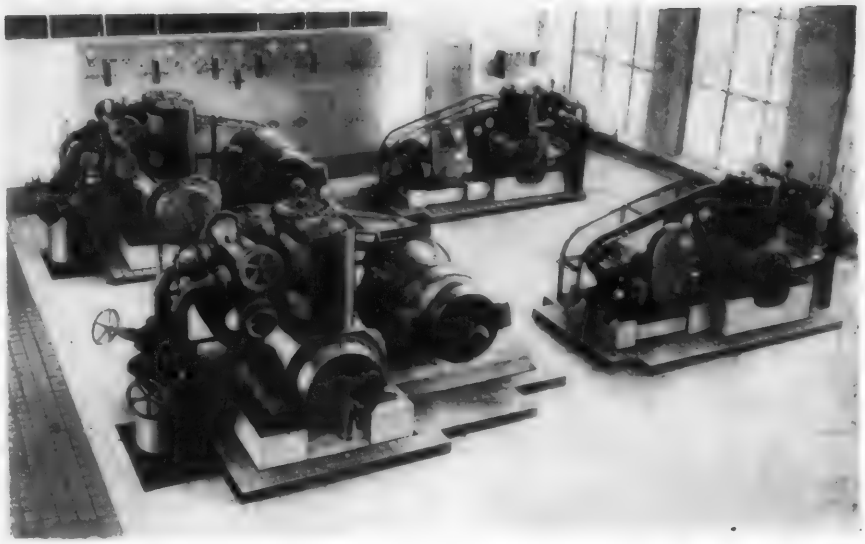

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We shall work out the project and quotation to comply with your technical requirements.

We have long years of experience in the installation of such equipment in different climatic conditions.

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Foreign Trade Corporation for Export of Complete Industrial Plants

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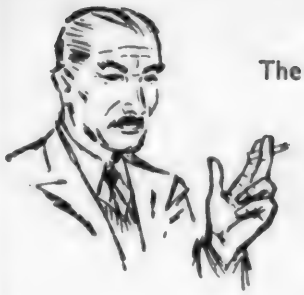

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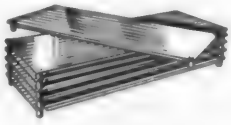
'Vermin and Dirt are excluded by WARCO easy-to-handle



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Reg. Trade Mark
ENGLAND
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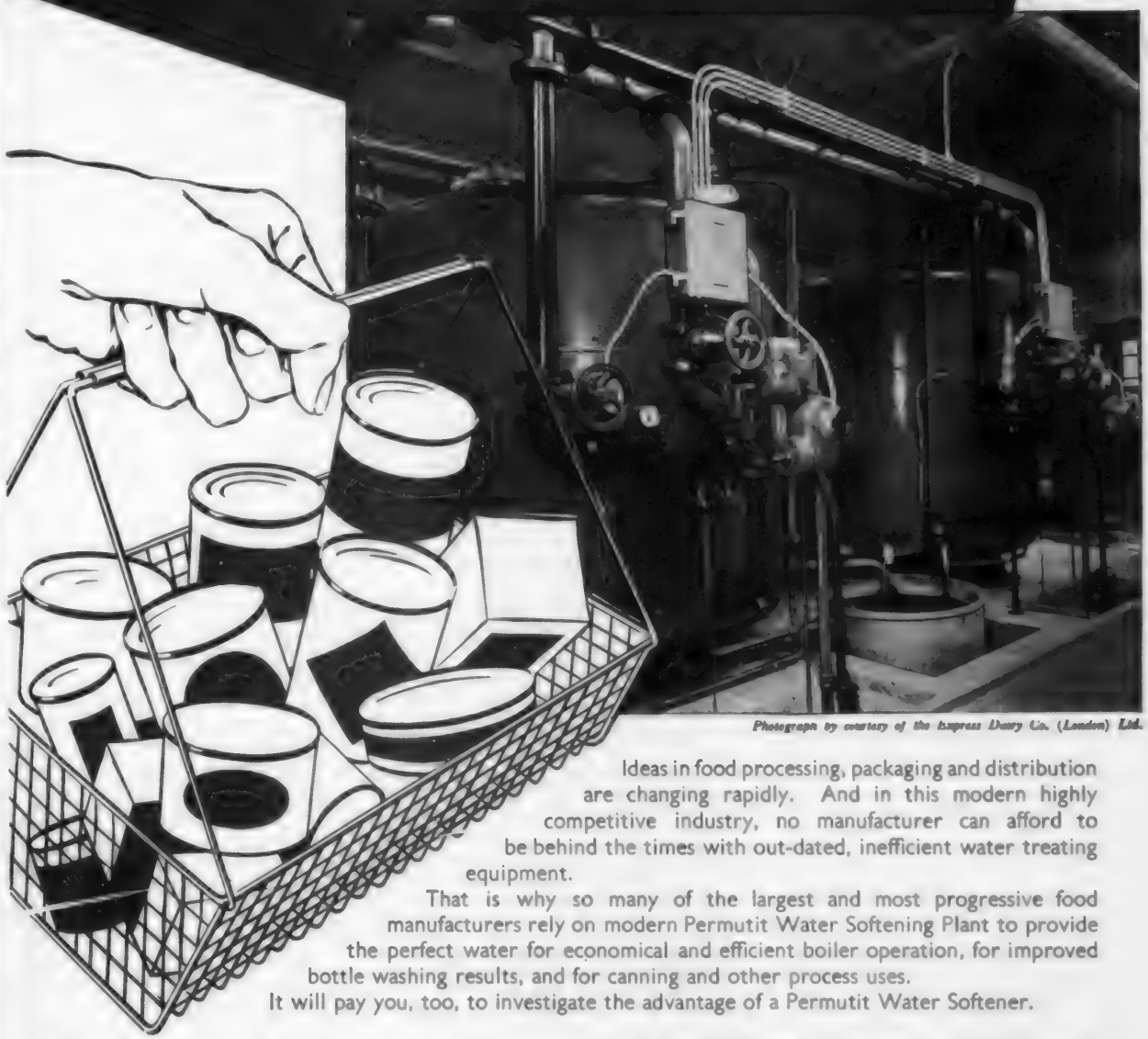
WATER TREATING PLANT SERVES THE MODERN FOOD INDUSTRY



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Ideas in food processing, packaging and distribution are changing rapidly. And in this modern highly competitive industry, no manufacturer can afford to be behind the times with out-dated, inefficient water treating equipment.

That is why so many of the largest and most progressive food manufacturers rely on modern Permutit Water Softening Plant to provide the perfect water for economical and efficient boiler operation, for improved bottle washing results, and for canning and other process uses.

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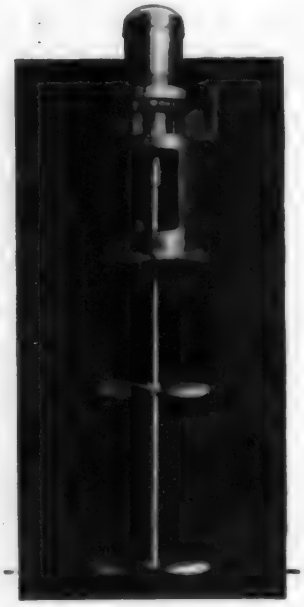
Type GA fluid mixer for medium speed mixing of semi-viscous fluids and where gentle agitation is required.

Type AD fluid agitator for high speed mixing of free-flowing solutions.



Type GVD permanently mounted geared fluid agitator for heavy duties.

To the Foodstuffs Industry we can supply a wide range of fluid agitating equipment for sugar syrups, sauces, soups, brine solutions for canning, essences, flavourings, aerated waters, marshmallow creams, etc.

As Fluid Agitation Specialists we have the experience and "know-how" to give you the best advice on your fluid mixing problems, whether in the laboratory or on large production scale.

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Overlooking the obvious

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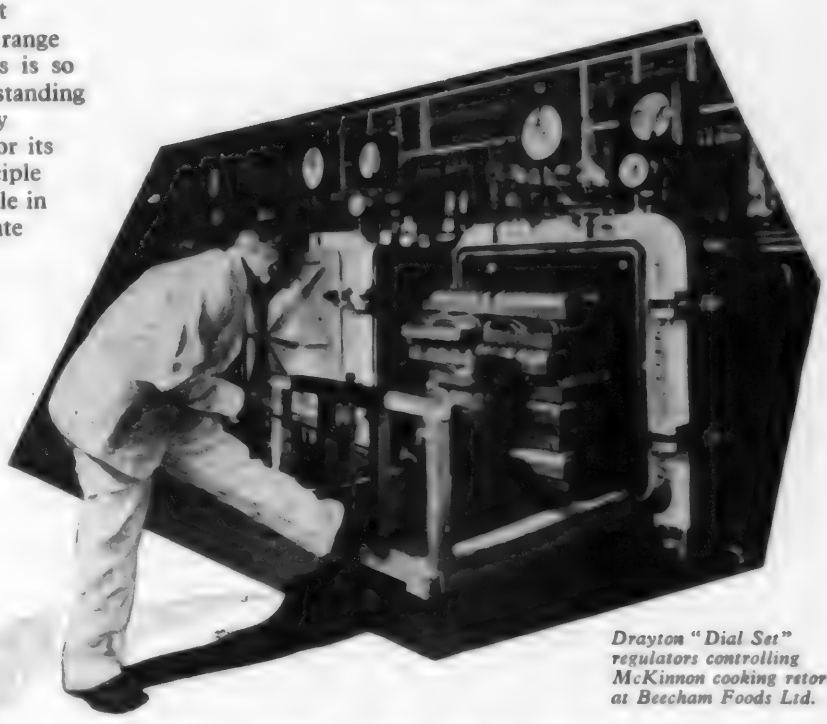
From a paper by R. Clare, B.Sc. of N.I.F.E.S.

It is for the thousand and one processing and heat treatment applications that the extensive range of Drayton automatic controls is so particularly valuable. The outstanding feature is that each and every regulator is essentially *right* for its specific job . . . sound in principle and design, accurate and reliable in performance, never too elaborate for the requirements.
Correct selection of control equipment is the important thing. We can advise on this from the widest experience of applying automatic control to most industrial heat processes.



Drayton "Dial Set" regulators controlling McKinnon cooking retorts at Beecham Foods Ltd.

Air operated controllers with or without recording feature.
Air or water operated controllers: expansion stem type.
On-off electric control: with a wide range of thermostatic switches.
Self-operated controllers for calorifiers, tanks, etc.
Proportioning electric control with electrical or capillary tube transmission.
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for Automatic Control

Write for the Drayton Catalogue.

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"The casing that breathes"

Prepared meats, hams, sausages, look better, sell better and are hygienically protected when displayed in Visking casings. Crystal-clear, colourfully transparent, or opaque, Visking casings are printed in colour for improved display appeal. See for yourself how much better your own products look when 'Visking' packed. Our Representative will call to give you a demonstration.

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CASINGS

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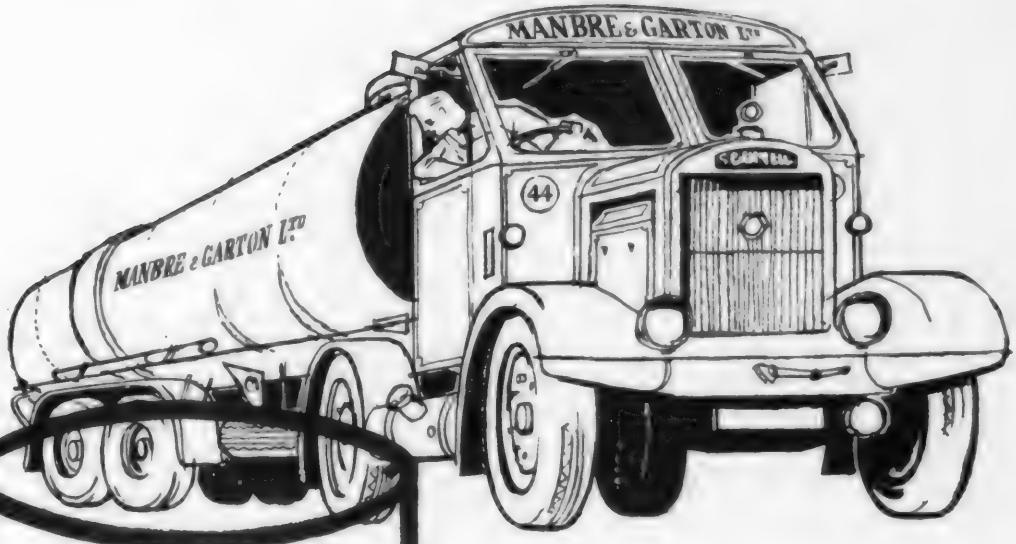

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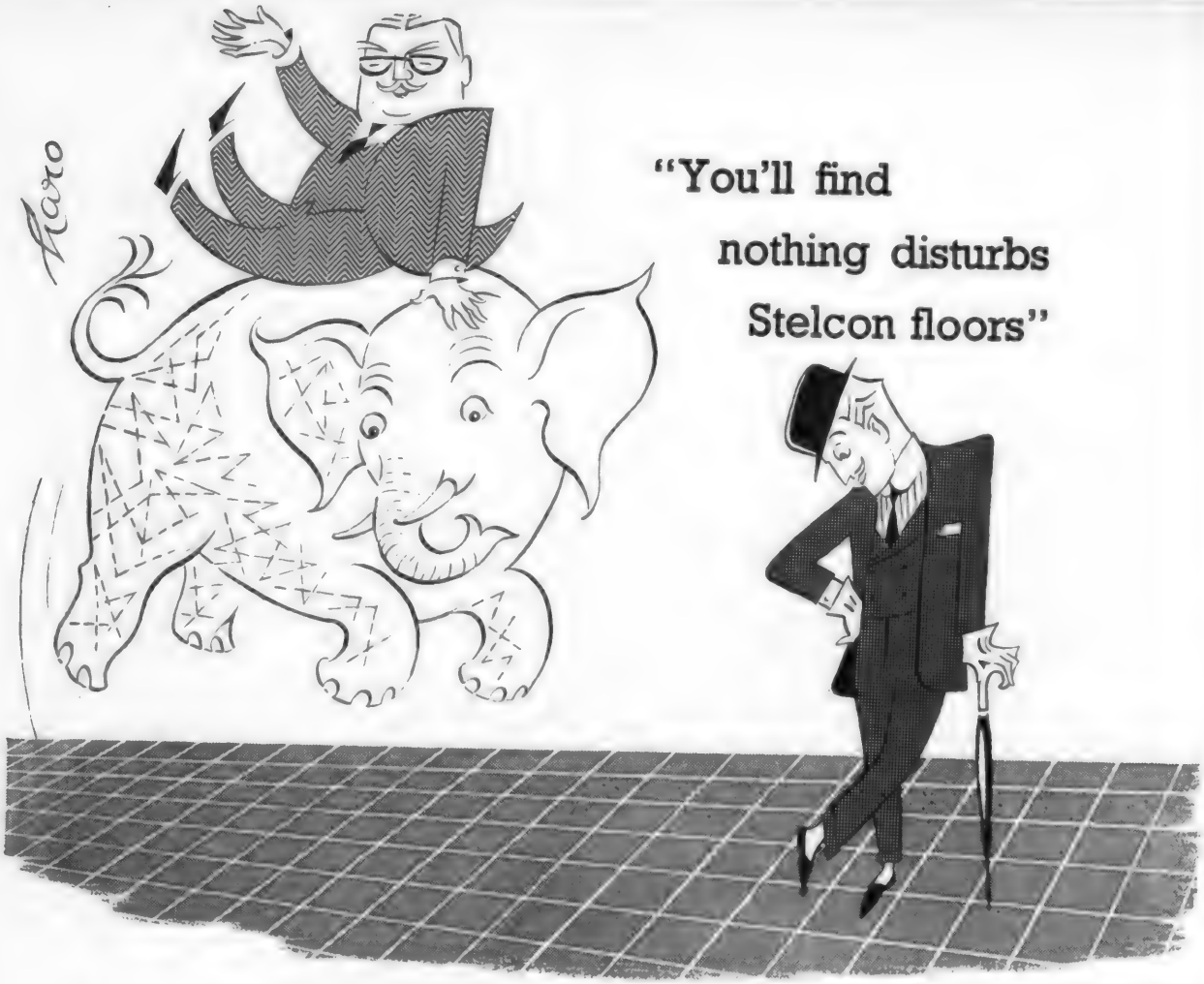

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Because they *stay* level under the heaviest traffic, Stelcon Floors will keep production flowing smoothly. Use them in factory, shop or on loading bays — they will pay for themselves by saving costly repairs. In fact, Stelcon Floors can't be beaten, they're dustless, hygienic and perfect for modern mechanical handling methods. Full details sent on request.

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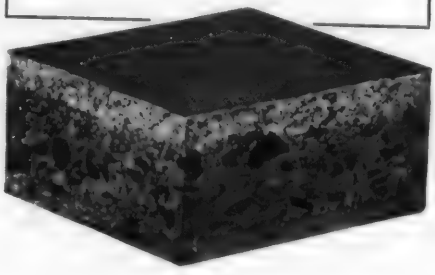

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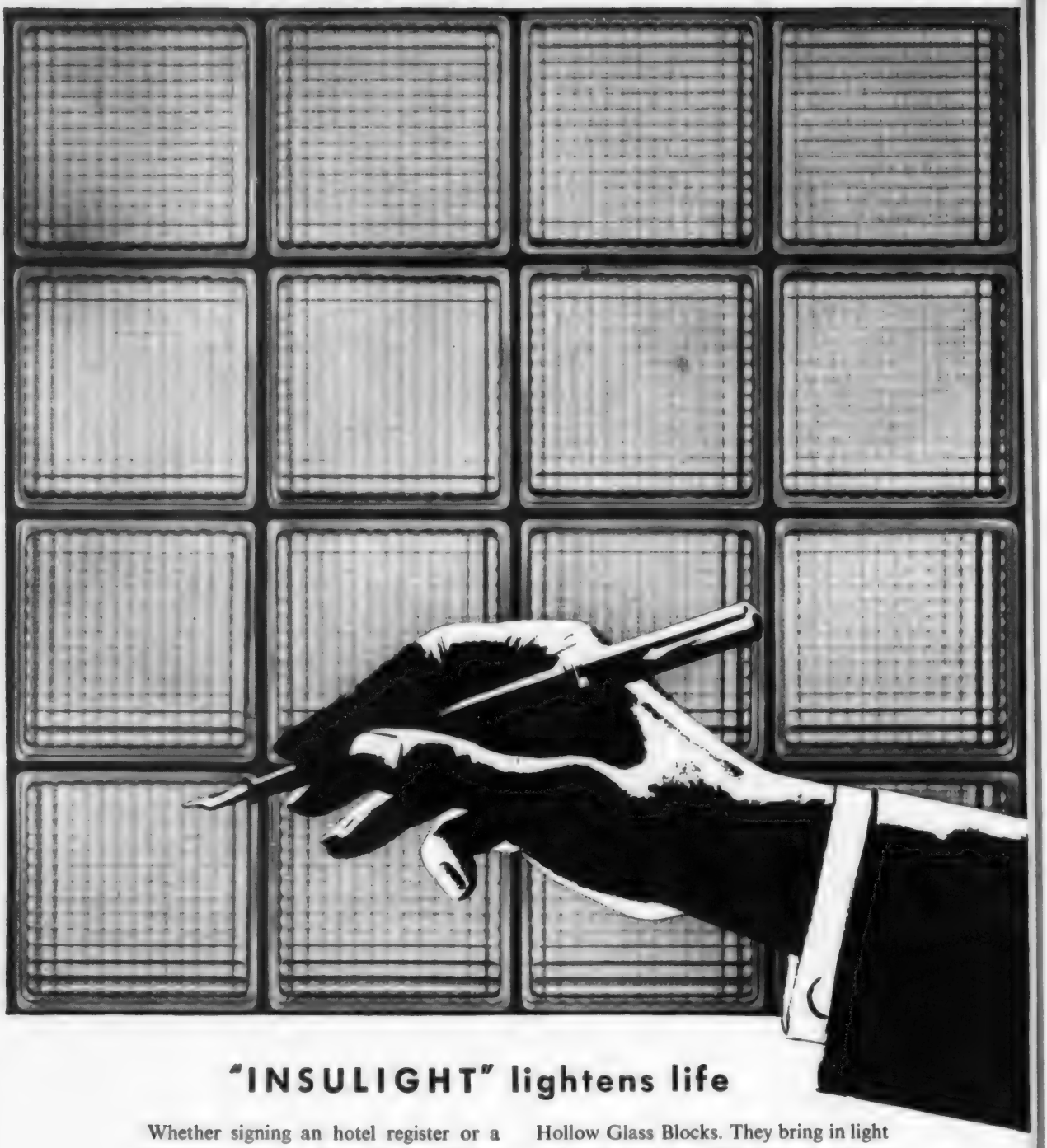

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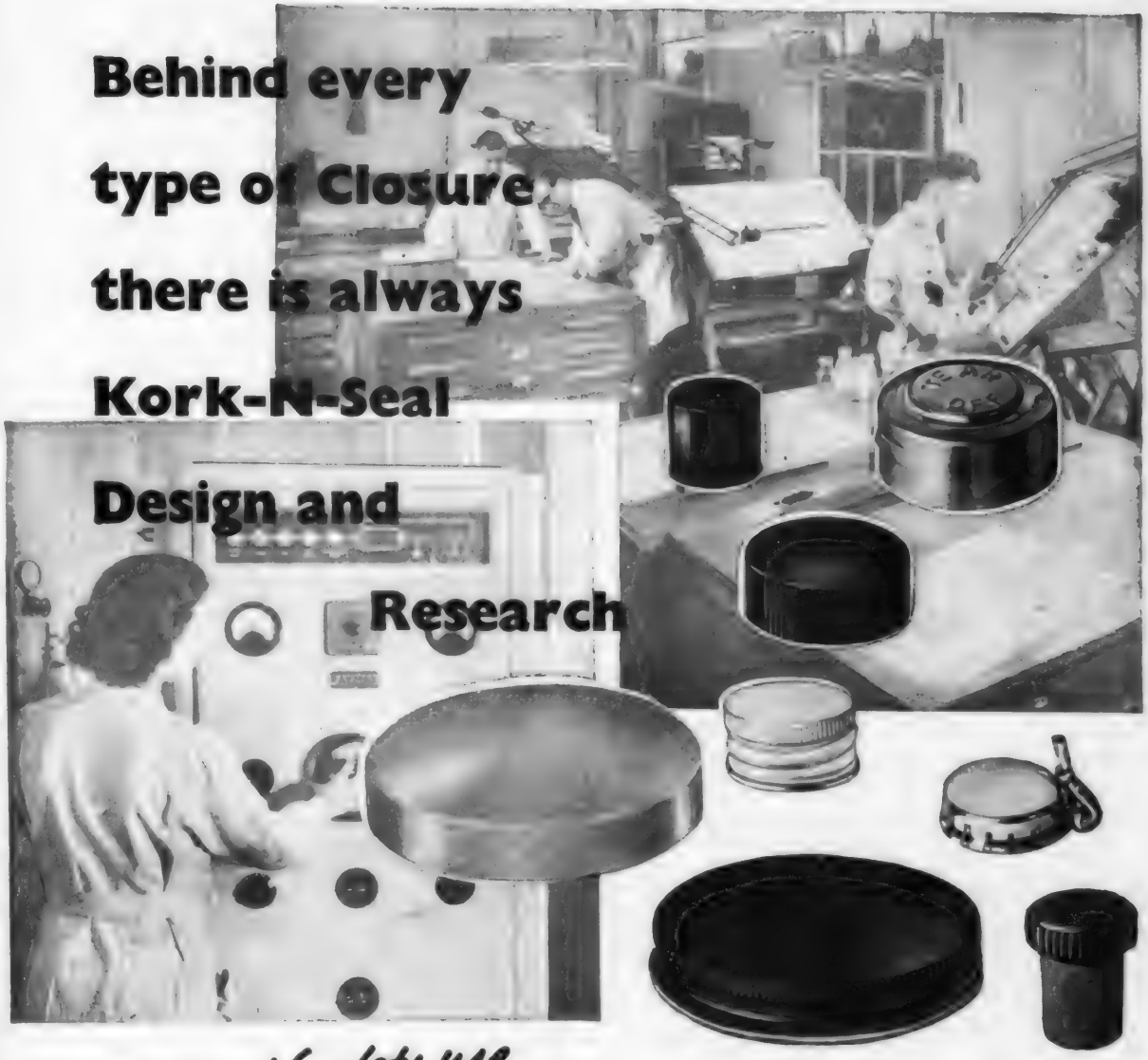

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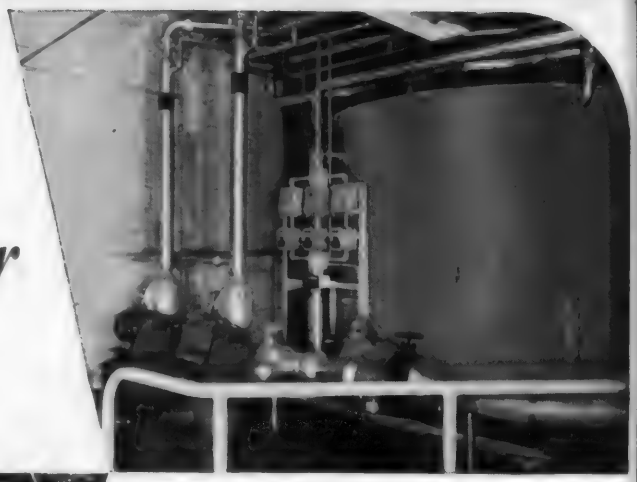

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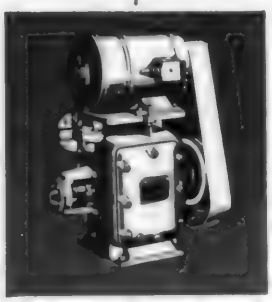

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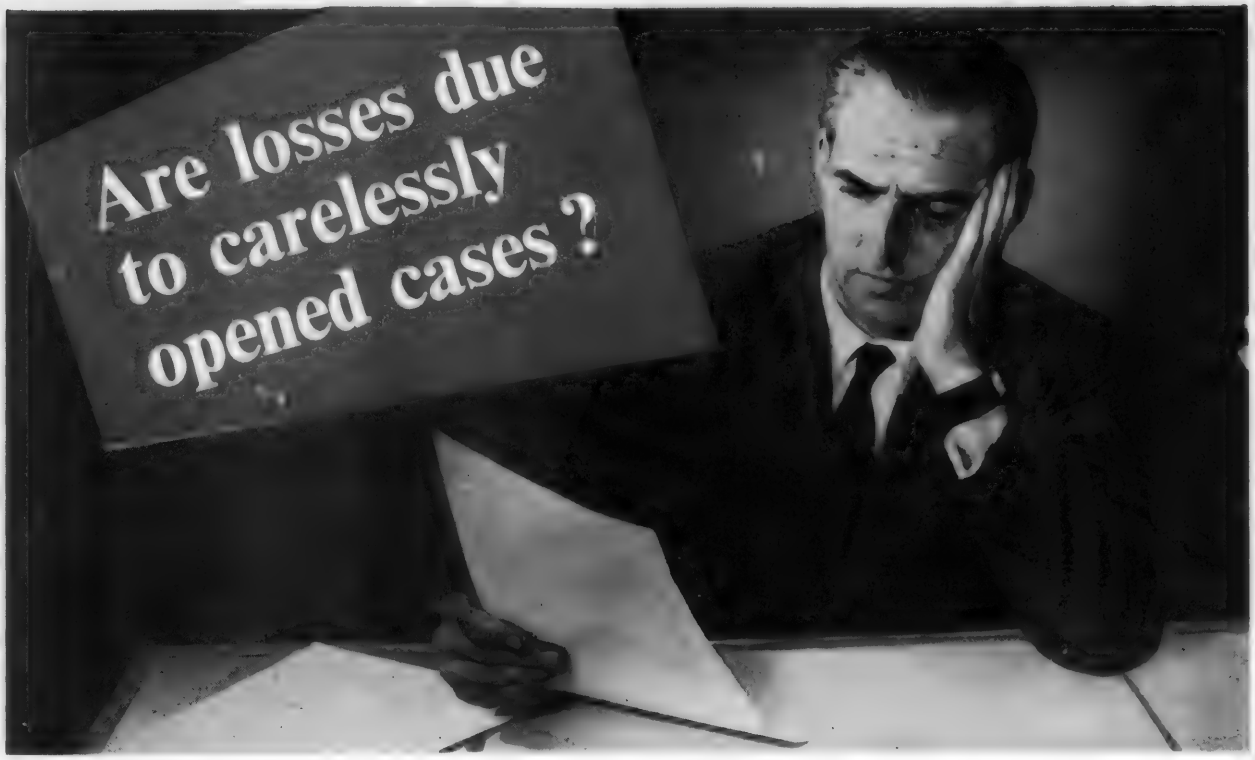

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Rippatape is easily and inexpensively applied by the manufacturer to the inside of the container blank. The tear-strip action operates from a slot situated a short distance from the edge of the container blank. When the tab is lifted and a continuing pull exerted, 'Rippatape' cleanly severs its way through the wall of the case along a line determined by the placement of the tape.

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- AVOIDS REPLACEMENT CLAIMS
- HANDY RE-USE OF CASES
- RETAINS THE FULL STACK STRENGTH OF THE CASES

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Illustrating the ease of opening Rippatape Tear-Strip containers produced for Empire Dairies Ltd. These new containers have been specifically designed to assist the trade to facilitate the easy break-down of pats of butter into two separate units.

The trend is to ease and speed packaging . . . so take advantage of the *many* advantages offered by this modern Rippatape Tear-Strip opening method.

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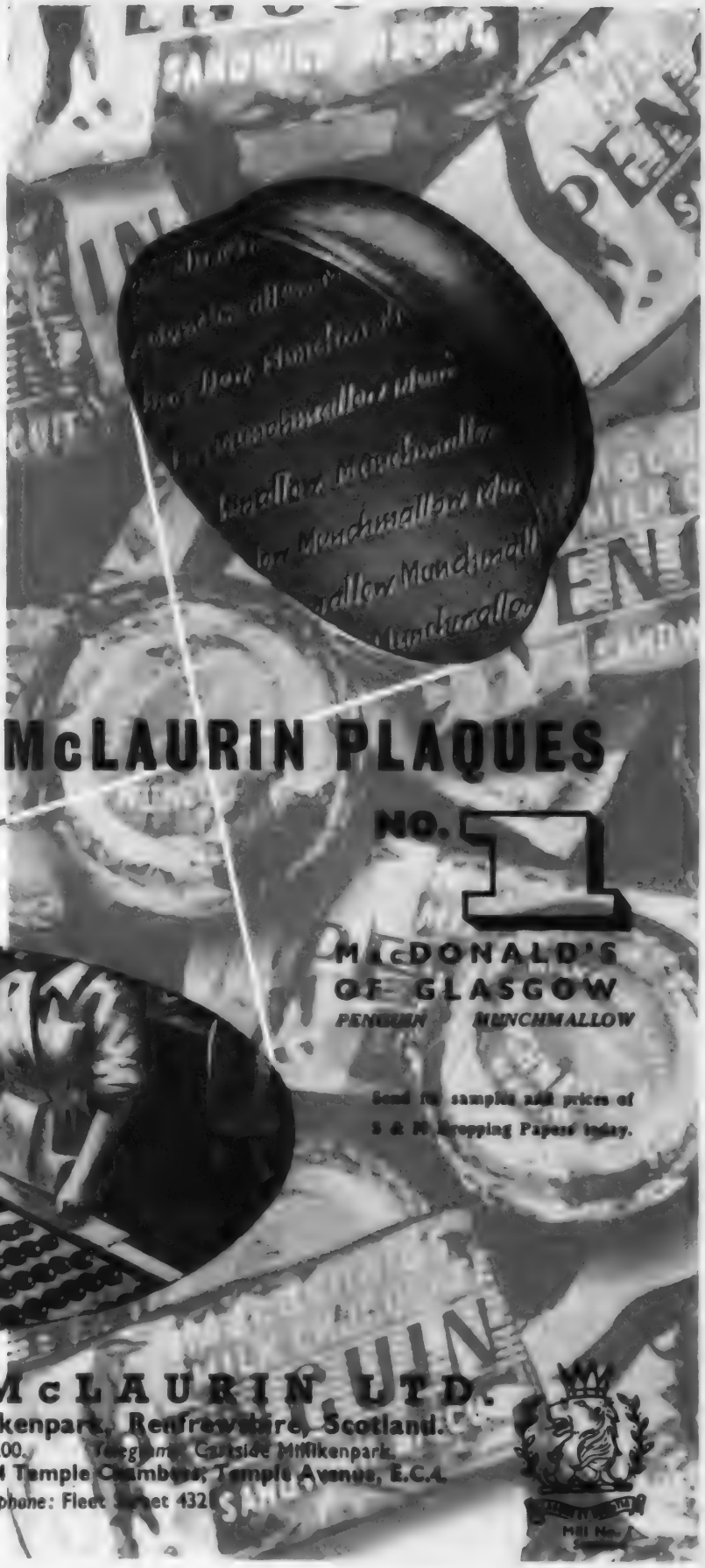

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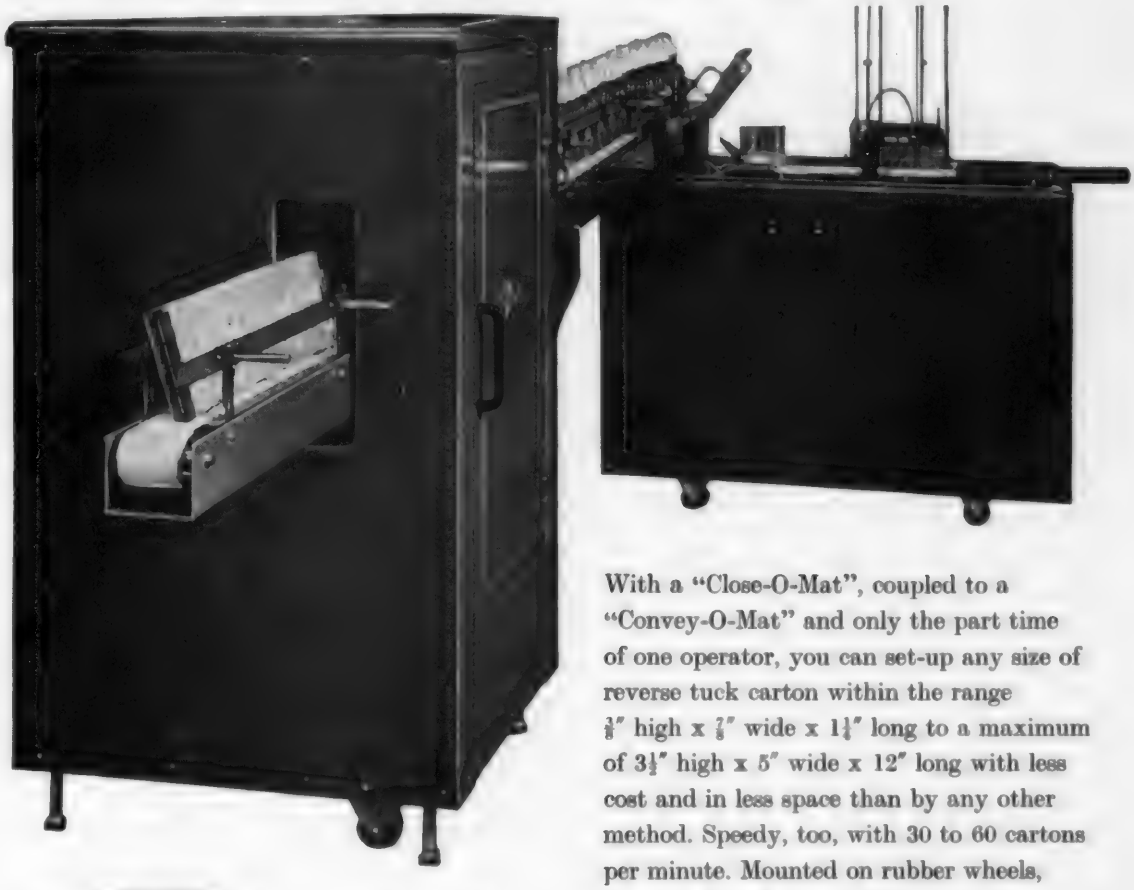
CARTON CLOSING MACHINES



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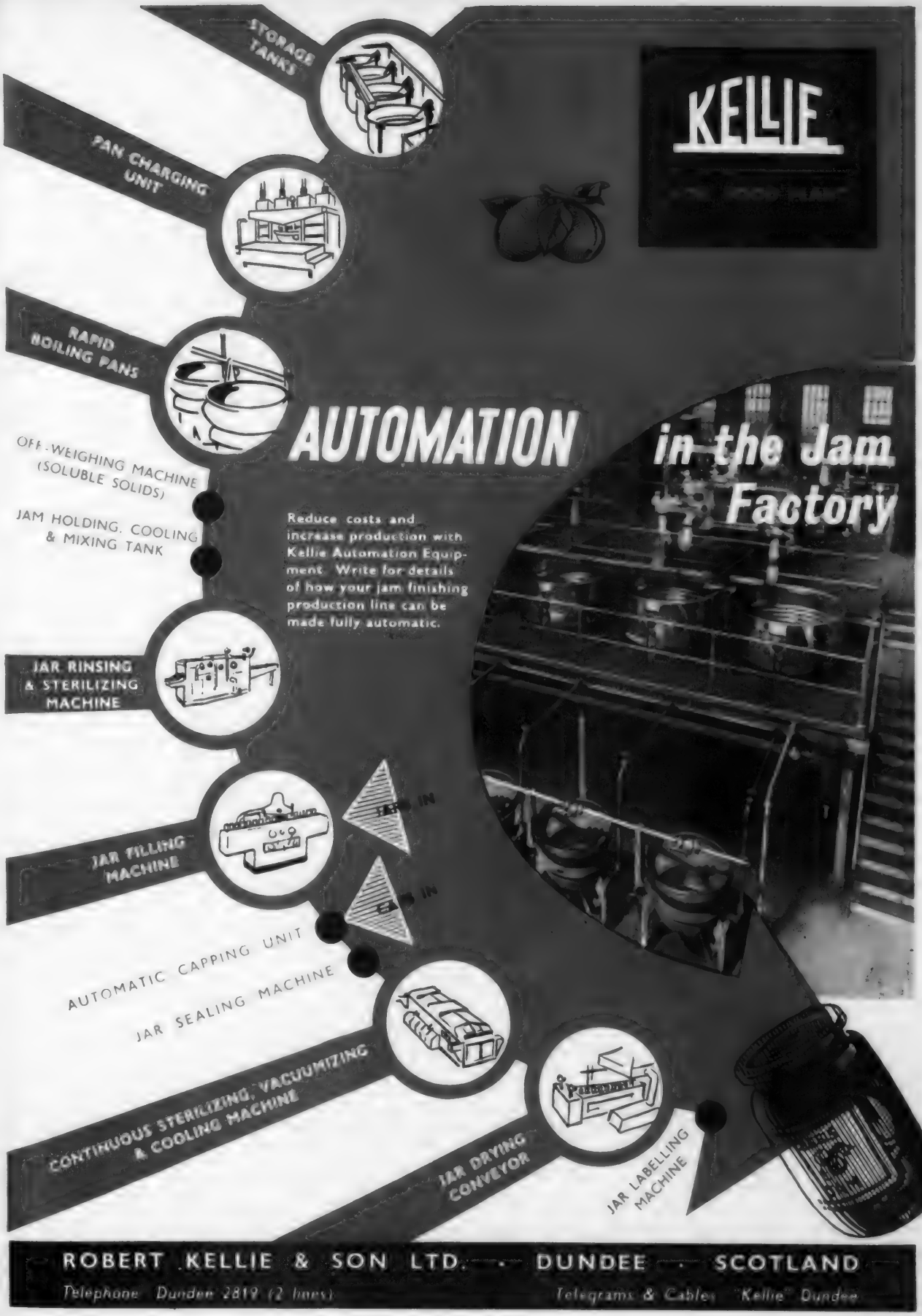
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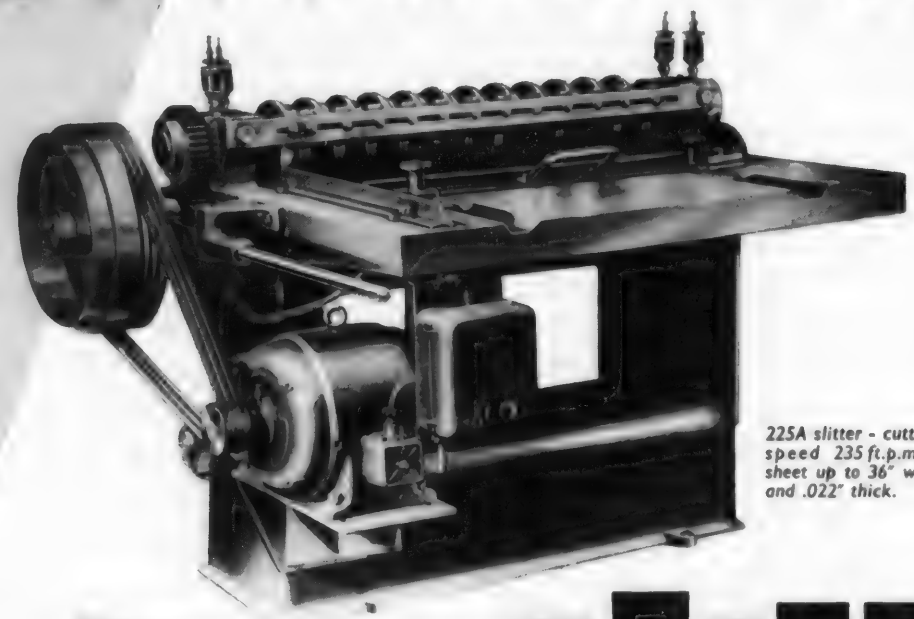

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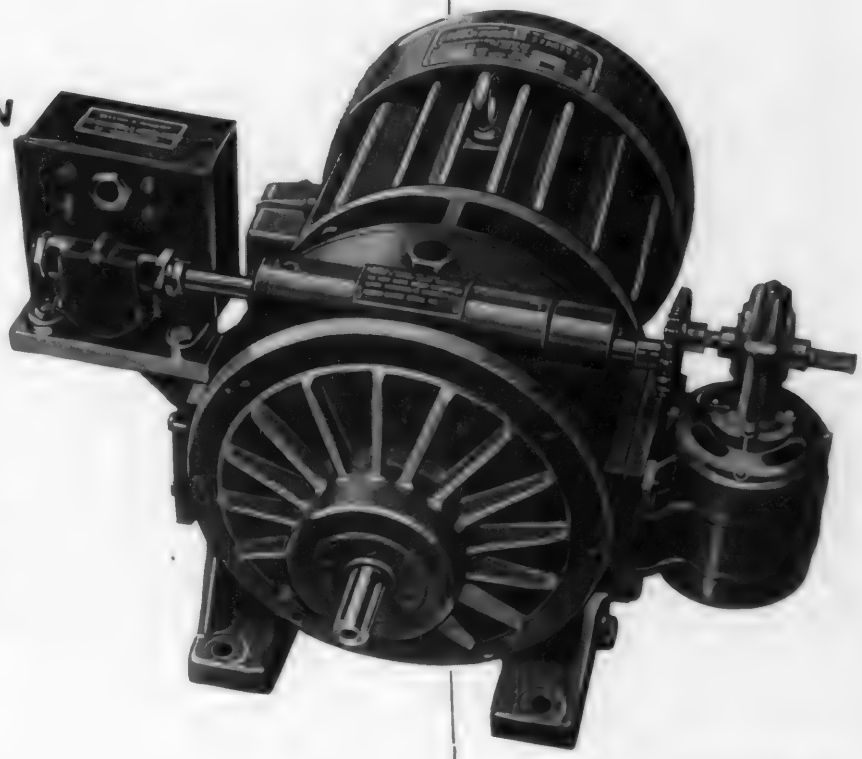

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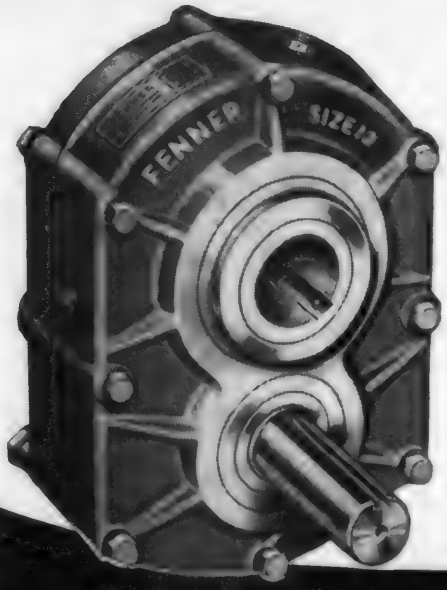

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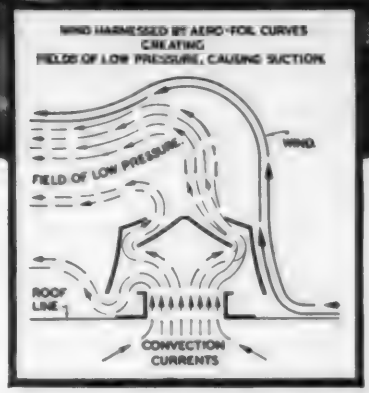

Above is a sectional view of the Colt SR type ventilator often used in bakeries. Without any of the disadvantages of noise, wear and tear, maintenance or running costs, one of these ventilators can provide continuous positive extract at a rate of 400,000 cubic feet per hour.

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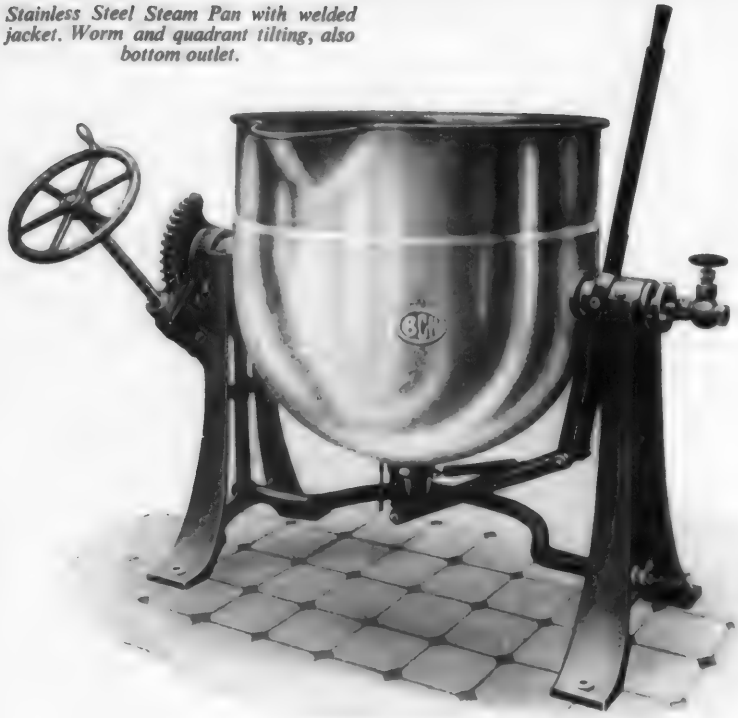

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Battery in operation at Cadby Hall

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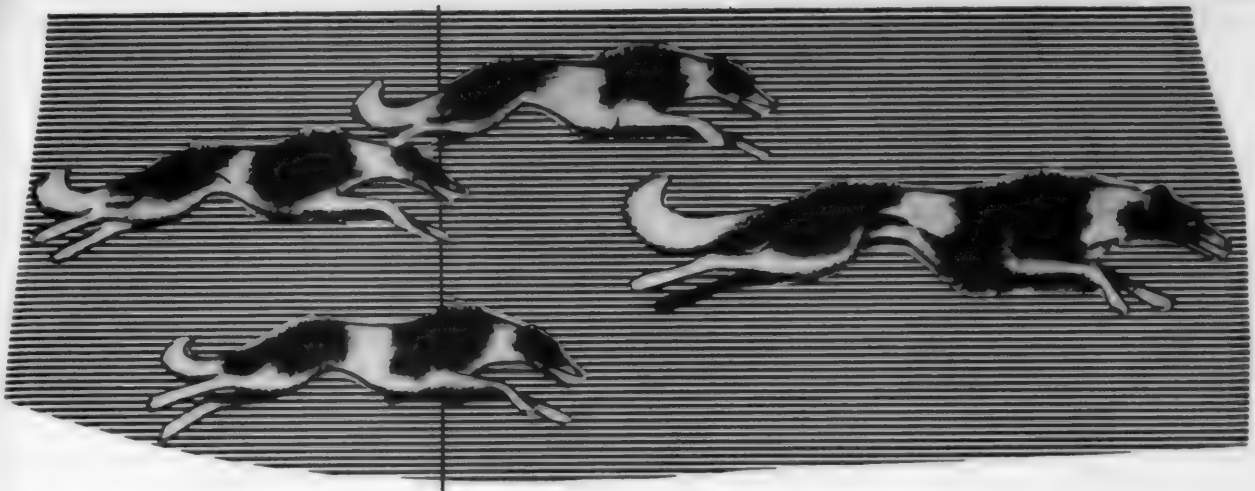

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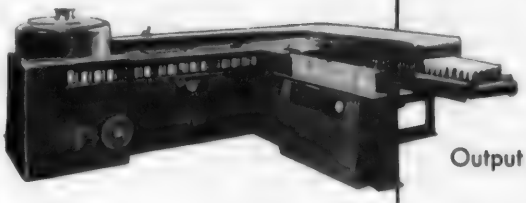
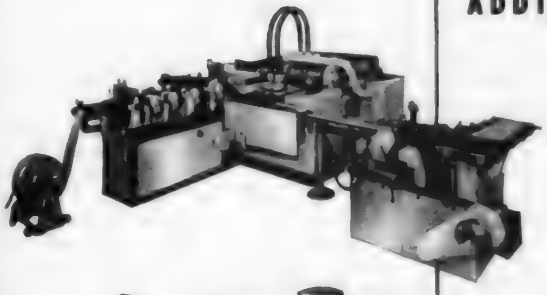
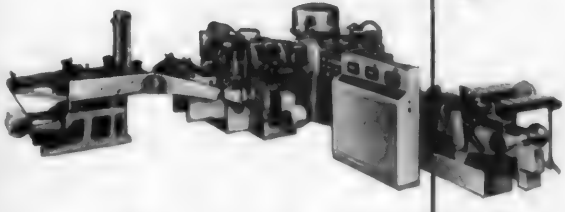


Output about 150–250 packets per minute **P U**

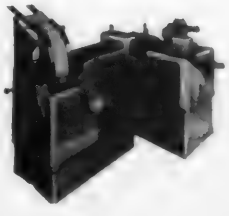
ADDITIONALLY THE WELL PROVED MACHINES



Type **ESZ I** Knipa for 1 kg ranged sugar cubes: from the sugar tablet to the finished packet, output up to 40 packs per minute.



Type **PDBR III** for the production of double packages of granulated sugar with plate type filler and incorporated 2 colour Aniline printing attachment. If desired also available for heat sealed inner bag.
Output:– approx:– 70 packs per minute



Type **WFC** with cutter for the conversion of sugar bars into wrapped cubes suitable for hotels, bars, cafes etc, production approx:– 100–120 wrappings per minute.

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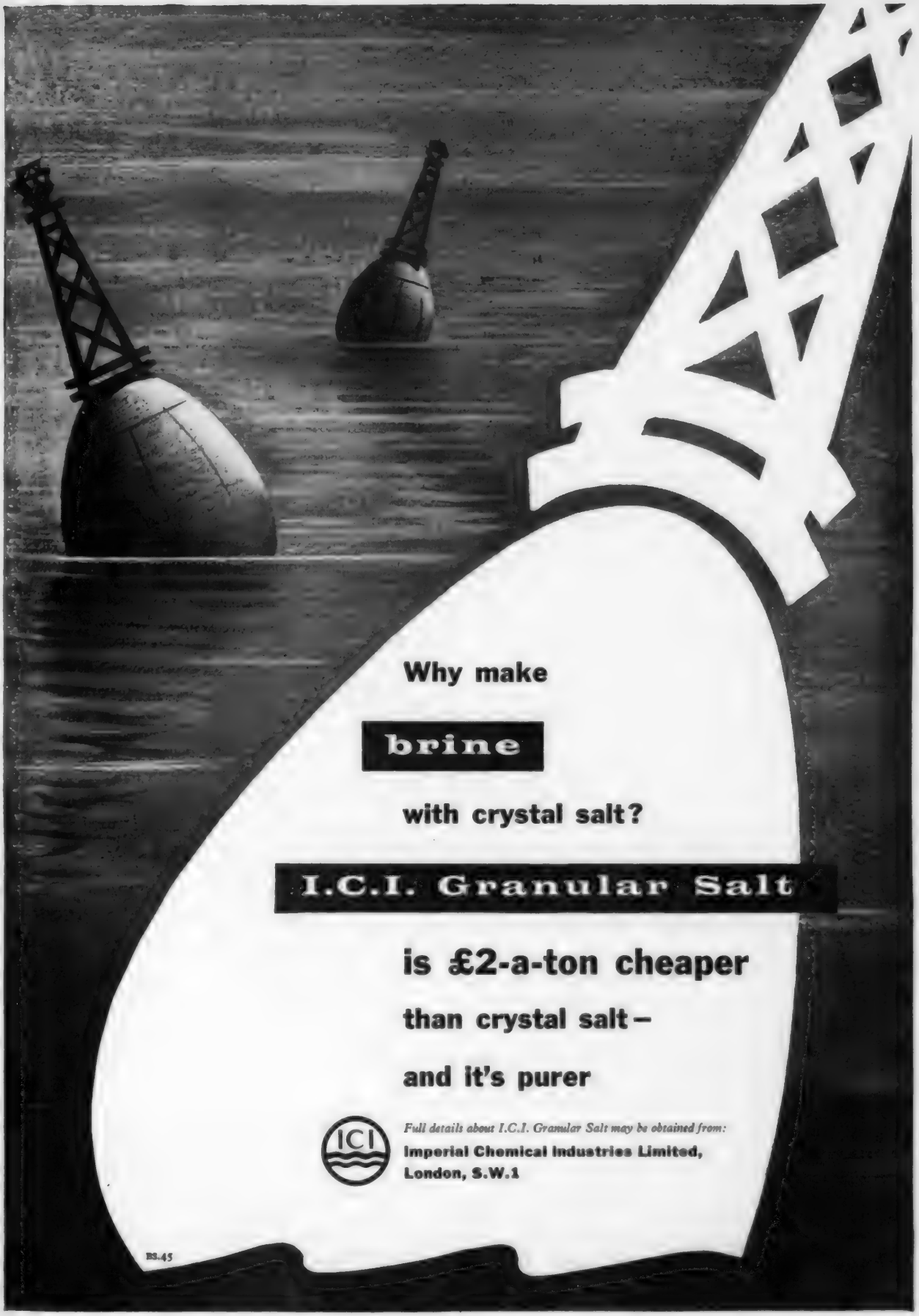
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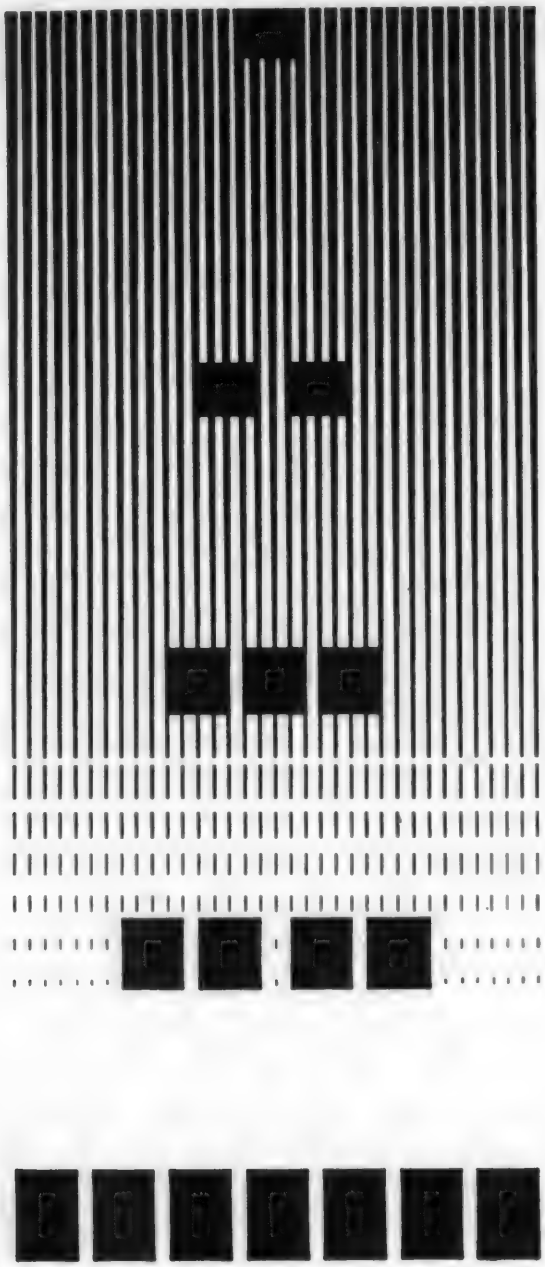

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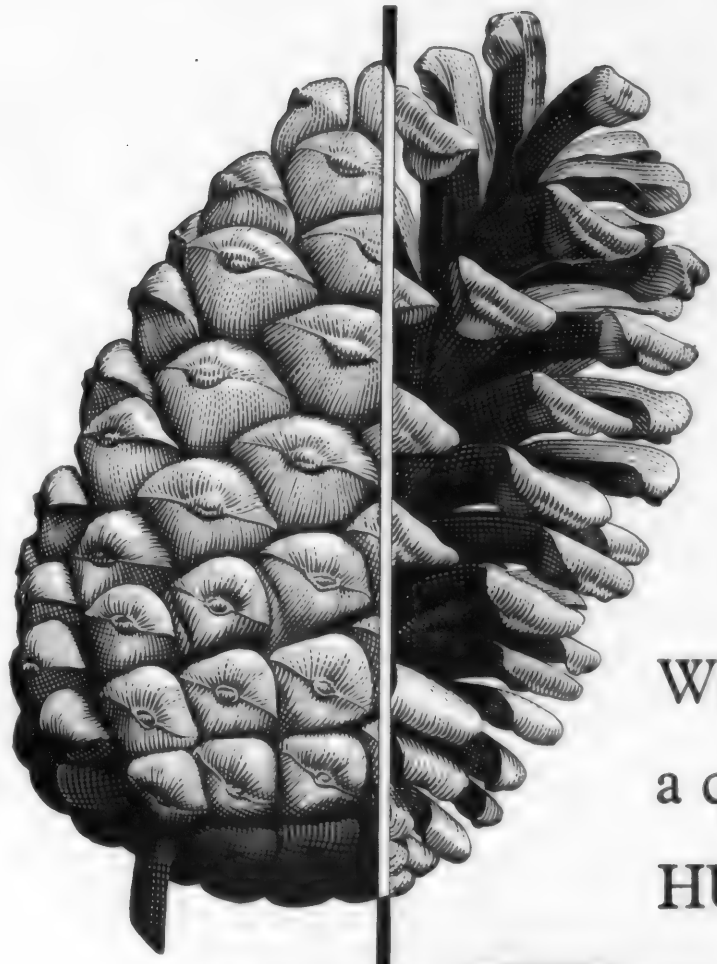

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Whatever your hot water problem under the new legislation, Ascot can solve it. Full information from any gas showroom or from Ascot's own Advisory Service

ASCOT

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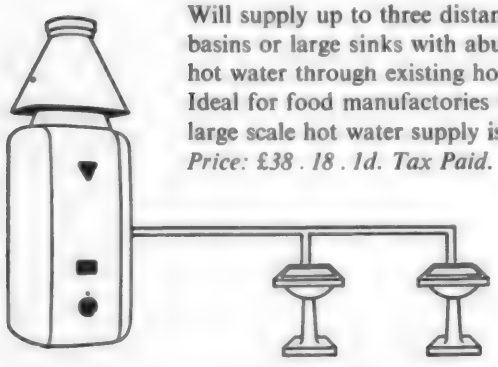

Will supply up to three distant handbasins or large sinks with abundant hot water through existing hot taps. Ideal for food manufactories where a large scale hot water supply is essential.
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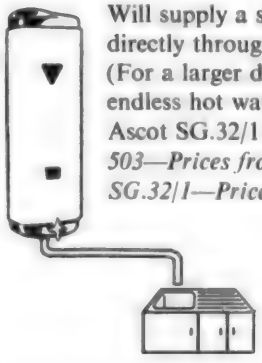

Will supply a sink or handbasin directly through a swivel spout. (For a larger direct supply of instant endless hot water to a big sink, the Ascot SG.32/1 is ideal.)
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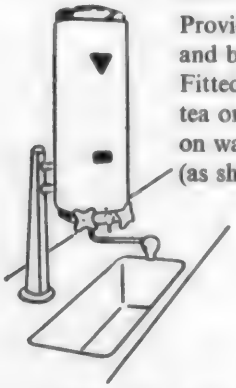

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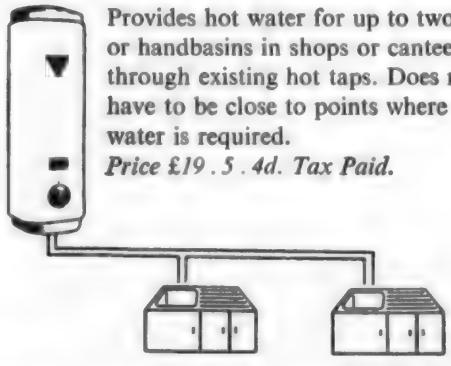

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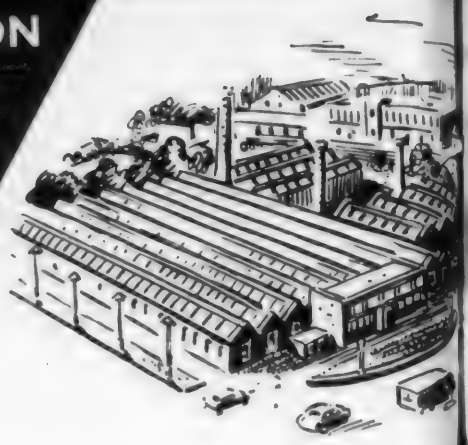

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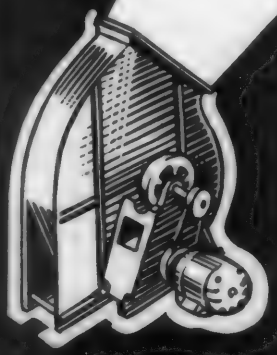

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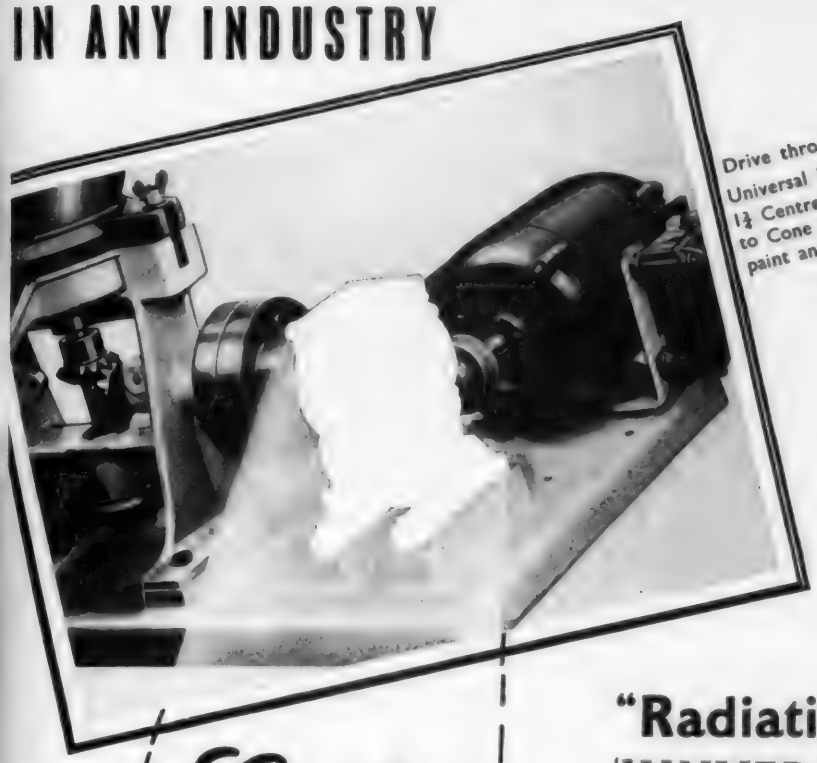

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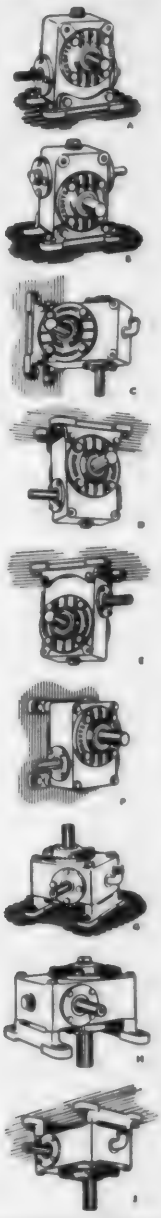

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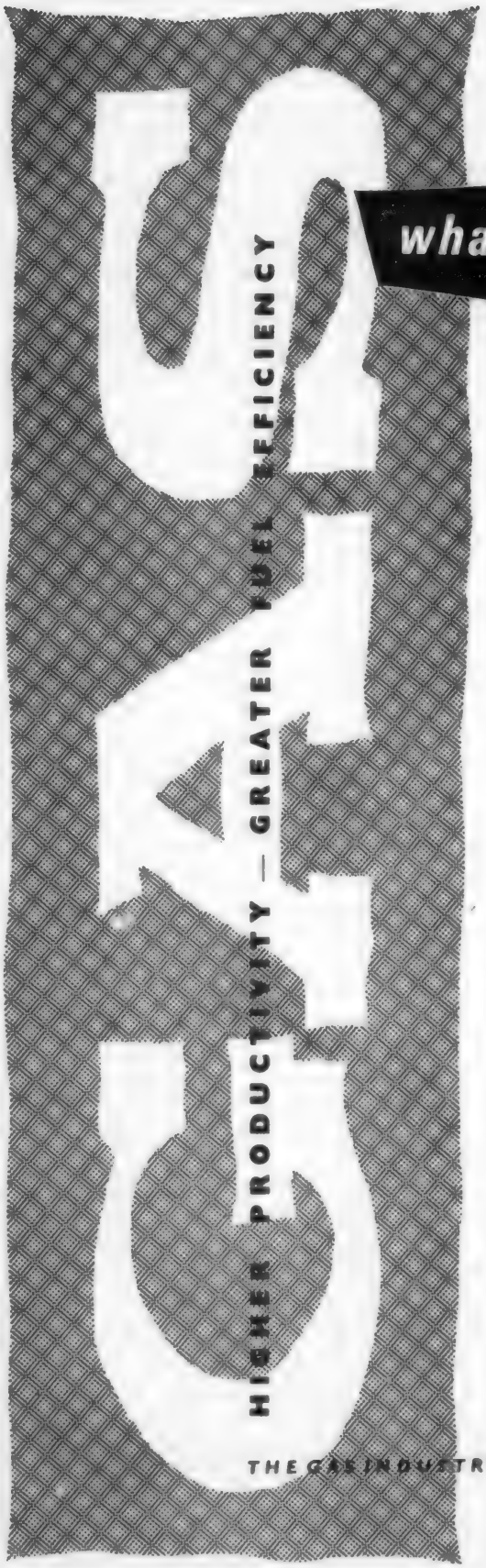

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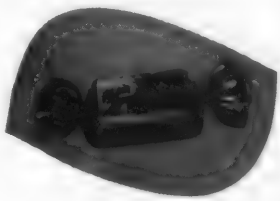

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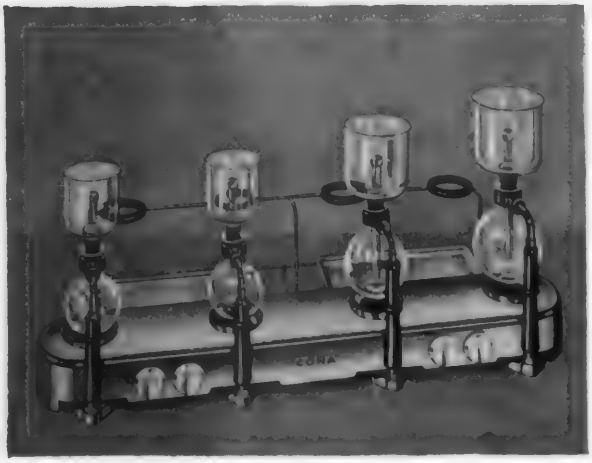

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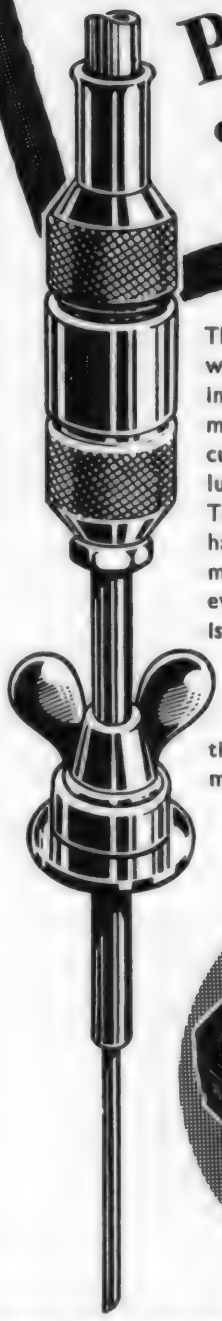
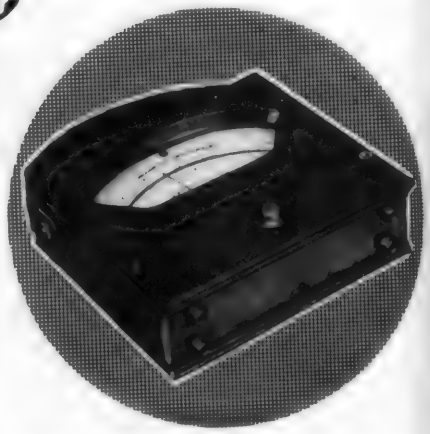
Heat Penetration

of canned foods in an autoclave



This is only one of many examples where Foster temperature measuring instruments aid safe and rapid food manufacture. In batch processing, curing times are reduced to the absolute minimum with Foster Needle Thermo-couples and special patterns have been developed for this and many other processes. But wherever the measurement of temperature is required Foster individually built instruments can be relied upon to give long and trouble free service. Write to us for further information on this or any other temperature measurement problem. We shall be happy to advise you.



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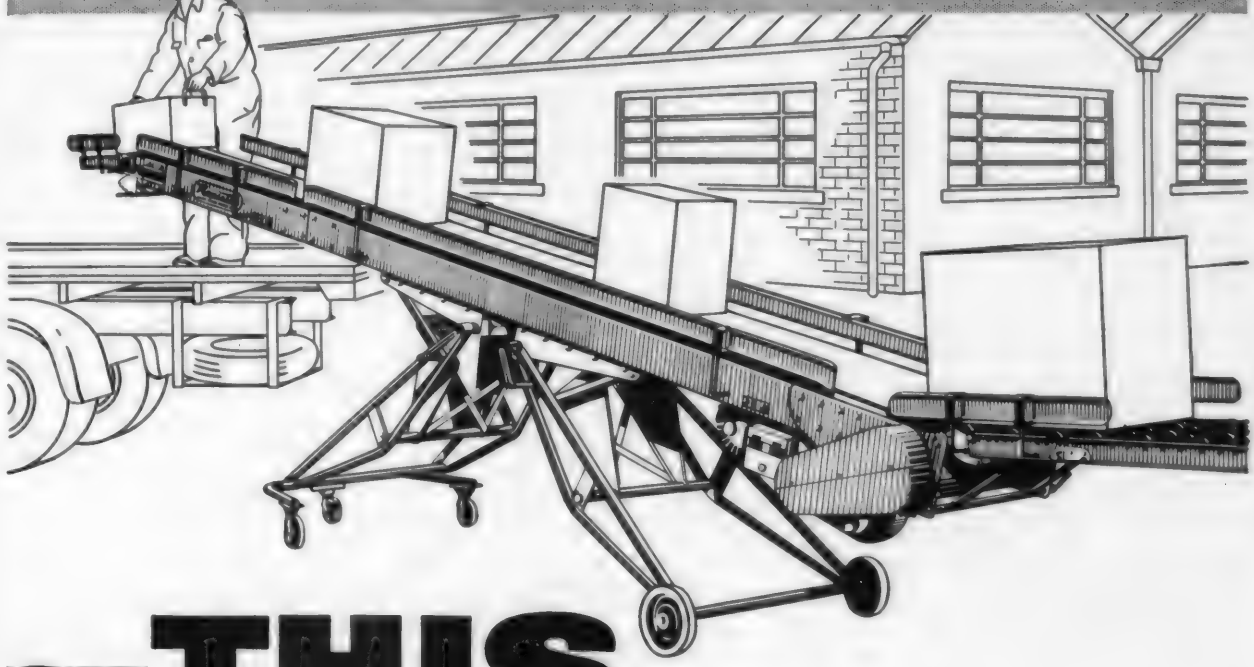

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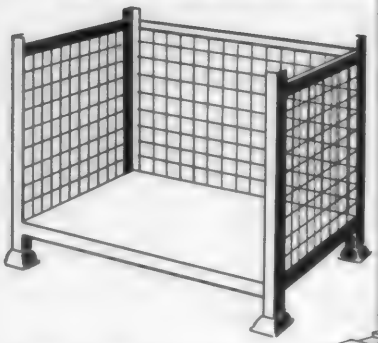
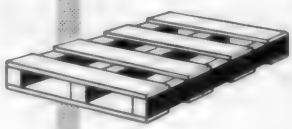
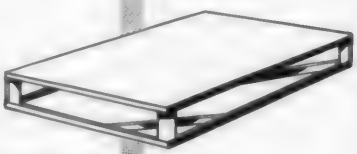


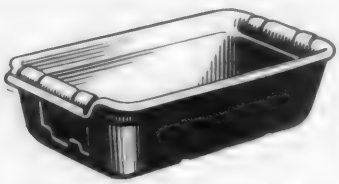
Cage type Stackable Pallets, suitable for cartoned foods, biscuits etc.



Flat Timber Pallets for handling and storing cartoned foodstuffs etc.



Flat Reversible Steel Pallets for handling cartoned foodstuffs, bottled or tinned foods etc.



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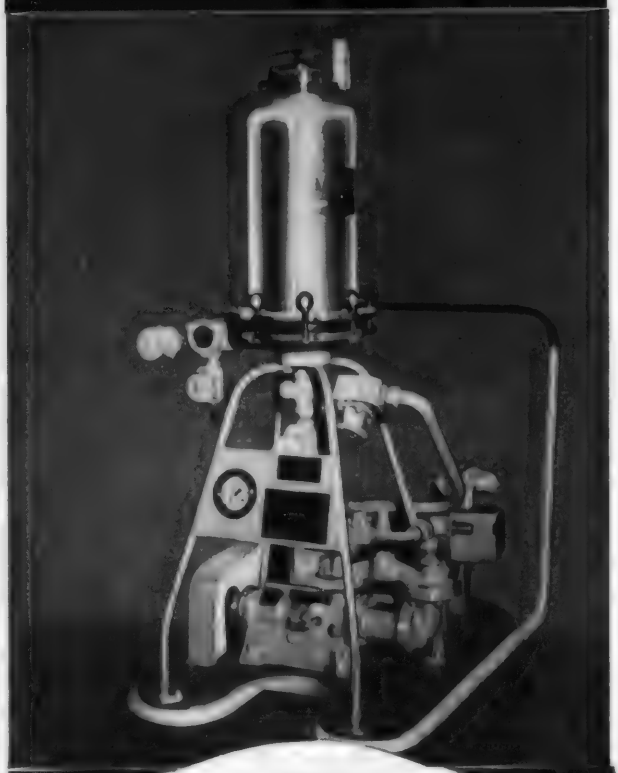

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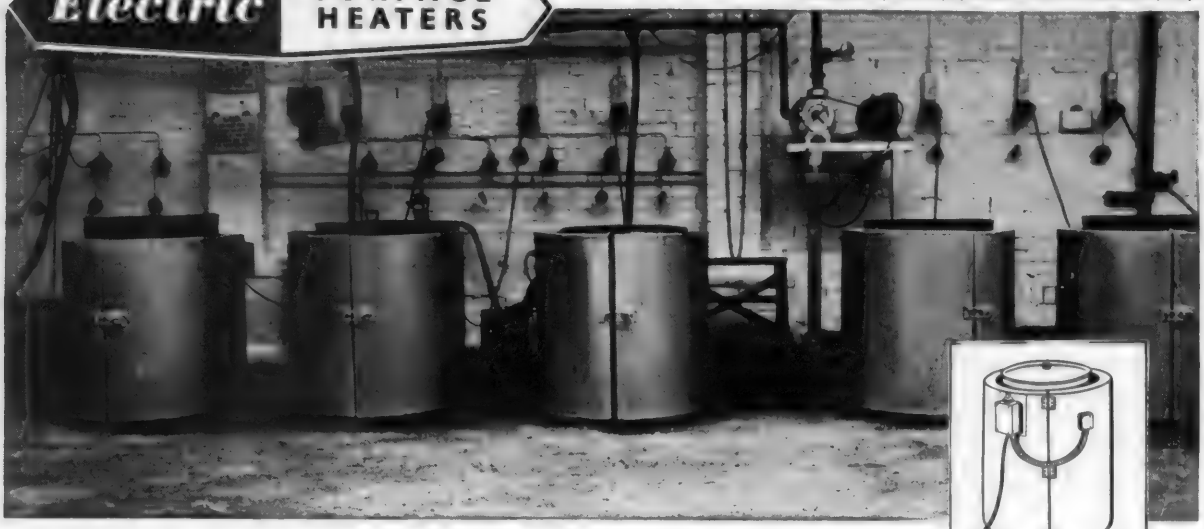

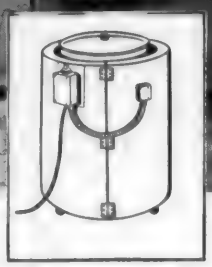

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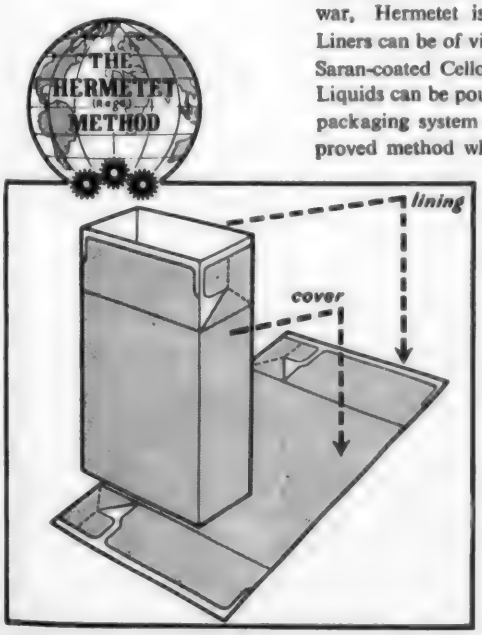

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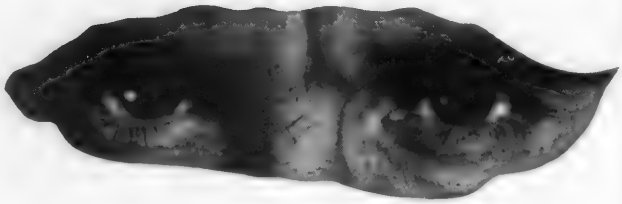

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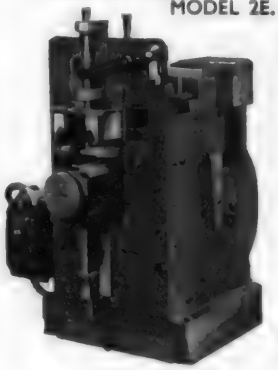

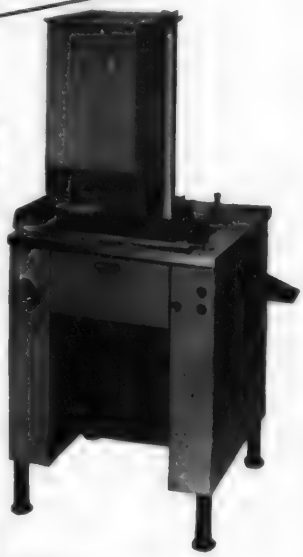

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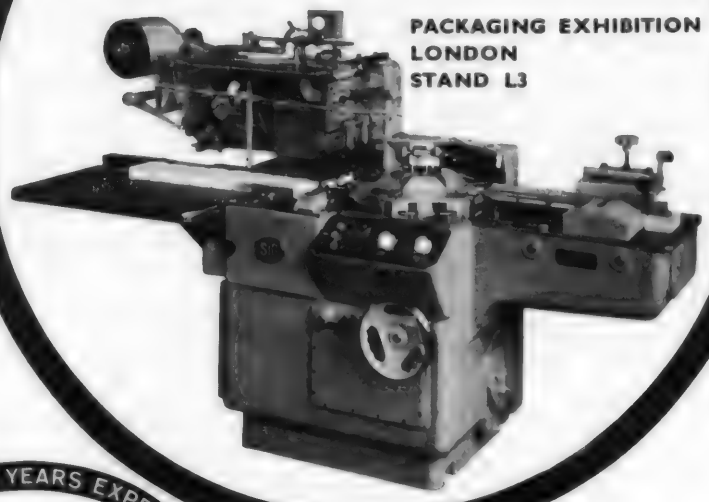

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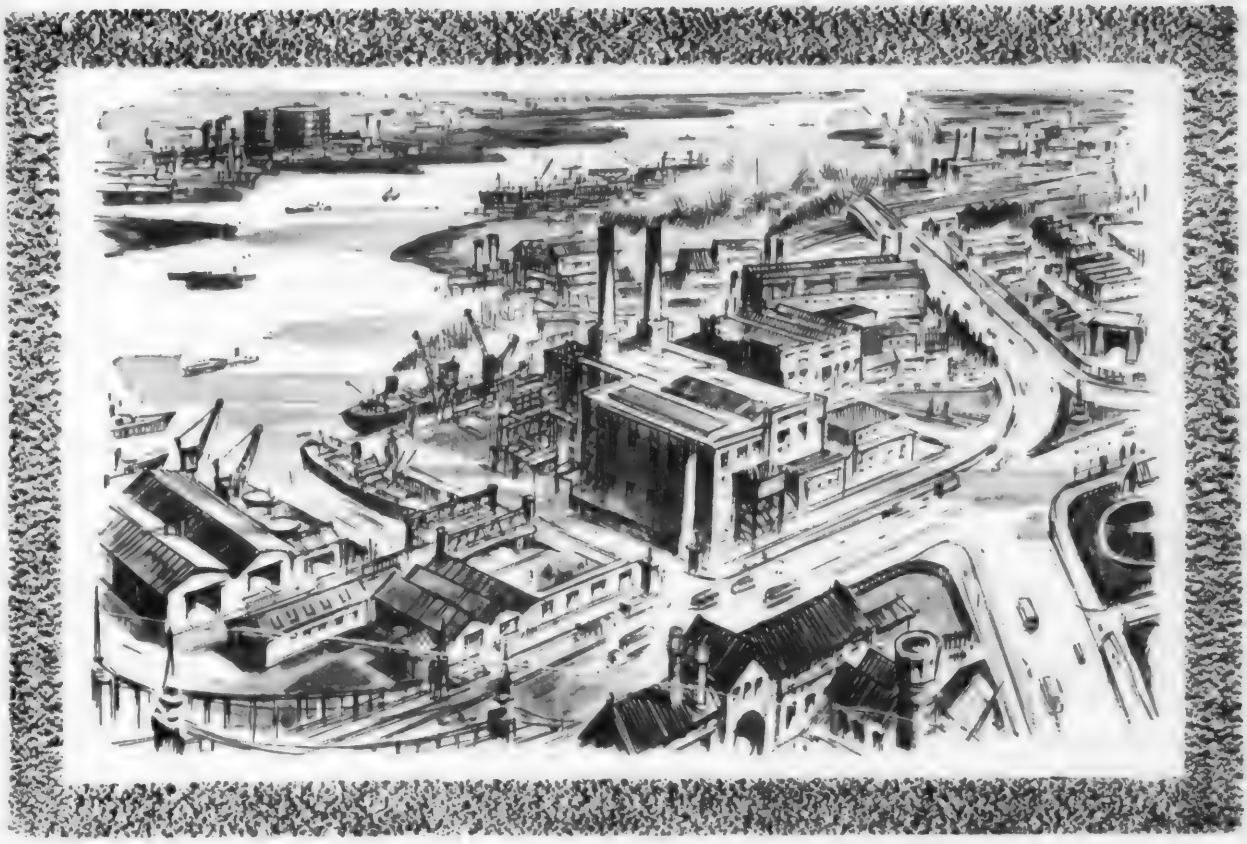
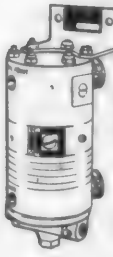
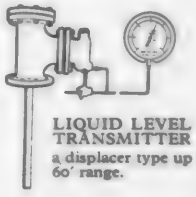


At a glance, nothing. But who would judge industrial efficiency at a glance? *You* wouldn't; you'd want to take a good look inside—at the control methods among other things. You'd want to know whether they were fully automatic at every suitable point. And you'd be right; for nowadays the really efficient plant uses automatic controls to save manpower and increase efficiency. And that means Sunvic. Sunvic Controls Ltd., make control and measurement equipment for almost every purpose in many major branches of industry. Sunvic controllers, relays, transmitters and thermometers are efficient and completely dependable. We shall be glad to offer expert advice on your control and measurement problems.



CONTROLLER
operating on the pneumatic force-balance principle.



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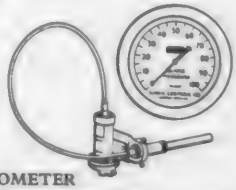

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FOOD MANUFACTURE

Volume XXXII. Number 1 Published Monthly January 1, 1957

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FOOD MANUFACTURE

Vol. XXXII, No. 1. **January 1, 1957**

Looking ahead in packaging

SINCE the first rudimentary containers were made, packaging and food have been linked together, but with the rise of the food manufacturing industry the link has grown infinitely stronger and more significant. Appert's introduction of the hermetically sealed can in 1810 started the era of mass-produced foods. Canned foods were followed by quick-frozen foods and foods packed in a variety of materials and forms from waxed paper cartons and glass jars to pressure-dispensing "aerosols" and polyester film. Pre-packaging and radiation sterilisation are now the latest trends, exemplifying the vigour with which new materials, new machines, new designs and new ideas are continually being exploited.

The Packaging Exhibition opens at Olympia on the 22nd of this month, and on page 5 we present a preview of this important event. Food manufacturers will find the answers to many of their questions at the exhibition and during the discussions which are to take place at the convention ("Better Packaging Means Better Living") which is being organised by the Institute of Packaging in conjunction with the exhibition. Attempts to forecast possible changes in consumer demand in the next few years, in total volume, tastes and preferences, etc., will be made by retailers. Food manufacturers will advise the retailers on what is likely to be offered to them based on known tendencies and developments, and the extent to which they can go to meet retail forecasts. The packaging supply industry will say how it can cope with the demands of both retailer and manufacturer, and the packages, containers and machinery it will probably have to offer in the next two to five years, which may influence present thinking. For instance, will much more food be sold in collapsible tubes? Developments in plastic containers (*i.e.* thin-walled tubs of polystyrene and p.v.c.) may radically alter some present packaging concepts as they have already done in the U.S.A. and Europe. So much new packaging machinery is now being offered or is in an advanced stage of development, that present factory packaging methods could be revolutionised. Nearly one-third of the exhibitors at the packaging exhibition are machinery makers.

Good design at a premium

GOOD craftsmanship but poor design. This sums up the views of the judges of the 3rd British Paper Box and Carton Design Contest. This almost complete unanimity of opinion on a subject which is generally controversial indicates that package design is badly in need of original ideas.

The most outspoken comments on the entries came from Mrs. Alison Settle, a member of the Council of Industrial Design. Too many packs were too much alike, she complained; there was not enough brand identification, and one firm could have been substituted for another without bother, though Mrs. Settle granted honourable exception to MacFisheries, Gilbeys and others who, she said, "stood out as strongly distinctive amid a sea of highly coloured, much lettered matter."

A kinder note was struck by Mr. Cecil Notley who judged the advertising value of packs. "The general level of work is extremely competent," he said, "although there is little that can be described as brilliant." Mr. Notley said that there was too much use of garish and light colour, cancelling each other out, and recommended the "skilful use of non-insistent colours or even black-and-white."

Both technical experts on construction craftsmanship praised the general standard, but were unable to see anything outstanding in the design of boxes.

A better opinion of some of the entries was expressed by Mr. Copeland, sales promotion manager of Harrods, who thought that the entries "showed a very high standard of ingenuity and design." However, he also criticised a number of entries, which he said were quite commonplace. He suggested that manufacturers should provide instruction on the uses of the boxed product. Other points he made were that the retailer requires a sturdy container, that too delicate shades get dirty quickly, and that packs that can be handed over the counter without wrapping and tying save time and money.

The most unqualified praise came from Miss Jeanne Heal, who represented the consumer. "Almost without exception in each group one package has 'sold' itself to me," she declared, and described how she was sold a box of sweets without even knowing what kind they were.

Fuel inefficiency

As we write this—at the beginning of petrol rationing—industry is completely bewildered by the astounding incompetence of the rationing scheme. Many companies have still not even had their basic coupons. Thousands of manufacturers have no idea how much petrol they will be allocated and, since output must be geared to transport, are being forced to plan their production on pure guesswork.

Supplementary coupons are issued exclusively by regional transport officers, and it is still not known when they will become available. Government assurances that they should be distributed by early January inspires no confidence whatever in those responsible for rationing.

How much extra petrol will be allocated to food manufacturers and distributors is anybody's guess. The Food Manufacturers' Federation urged that regional transport officers and regional food officers should be given definite instructions to the effect that distributors of non-perishable foods should get an allocation of not less than 75% of the normal mileage and distributors of perishable foods should get 90%.

This was not done, so a company's allocation would appear to depend upon the judgment of the regional fuel office. Apart from a directive of priority and the announcement that the bulk movement of essential foods will receive "special consideration" there has been a deplorable lack of national guidance on this matter.

Petrol rationing has been foreseen since the end of July, when Nasser first announced his intention of nationalising the Suez Canal; British and French intervention in Suez precipitated matters. This makes it all the more surprising that Whitehall's handling of the petrol situation should have been so inept. Surprise turns to complete bewilderment when one reads that priorities have been so ordered that one of the first groups to get their petrol allocation settled are the political parties in the constituencies—they get enough for 3,700 miles a month!

Large-scale synthesis of vitamin A

The fortification of margarine has been legally required since war-time days, but the use of synthetic vitamin A for this purpose is comparatively recent. The structure of vitamin A was elucidated in 1931, but it was not until 1947 that a practical synthesis was achieved by Dr. O. Isler of the Roche Laboratories in Basle.

The rising demand for vitamin A from the food industry in this country has necessitated the building of a new plant for large-scale synthesis. Built by the Roche organisation at Dalry, Ayrshire, the plant will be officially opened this month.

Work began on the site, which covers an area of 15 acres, late in 1954. Batches of synthetic vitamin A acetate are already being made, and production will be gradually increased so that by the middle of the year the plant will be working to full capacity producing high potency acetate and palmitate concentrates. The concentrates will not be sold as such to margarine manufacturers, but will be made into "master-mixes" of about 200,000 i.u. of vitamins A and D_3. The synthetic vitamin A will also be exported to Asian countries for incorporation in vanaspati oil—only synthetic vitamin A can be used for fortification of this product, on religious grounds. The concentrates will also be used for incorporation into pig and poultry foods.

The synthesis of vitamin A is one of exceptional complexity, involving 14 distinct stages in the process of building up the final compound. In the new plant, instrumentation and automatic control are extensively used, and strict laboratory control at various stages will ensure that the final products conform to the highest standards of purity, uniformity and reliability.

In our February issue we hope to publish an illustrated article on this plant.

Tips for the experts

Congratulations are due to Mr. Mark Bogod of J. Lyons and Co. for teaching the Americans something about an industry of which they are generally considered to be the leading exponents. Mr. Bogod is the production and despatch manager of Lyons' ice cream department, and recently he had the pleasure of going to the U.S. to tell the International Association of Ice Cream Manufacturers of British developments in ice cream technology.

He went at the invitation of the Association's technical adviser, Prof. C. D. Dahle, who believes that British production techniques are in many ways ahead of those in the U.S., and wanted his colleagues to hear about them from a British expert.

Mr. Bogod discussed "novelty" operations, "novelty" connoting these articles outside the normal bulk range, for instance family bricks and chocices. He illustrated his talk with a film demonstrating the manufacture of these items at Lyons' factory, together with automatic and bulk handling systems used to convey the products into the refrigerated vans bound for distribution depots. To round off the lecture, samples of Lyons' "novelties" were distributed to the appreciative audience.

An important pointer to the high standard of British ice cream technology is that today the industry has its own plant engineers and suppliers whereas before the war almost all plant had to be imported from the U.S.

The cost of freedom to work

LONG-SERVICE awards by companies to faithful employees are often in the news, but this cannot be allowed to obscure the fact that many young men and women today have a gypsy-like attitude to their jobs, changing them as frequently as the mood takes them. Labour turnover, to use current economic jargon, is costing manufacturing industry £230 million a year. If all employed persons are included, the cost to the country as a whole is perhaps £700 million. This estimate, based on the results of a British Institute of Management pilot survey, was made in a paper presented to the B.I.M. conference at Harrogate by Mr. R. L. Webster, of Hoover Ltd., a member of the survey's steering committee.

The survey, which was carried out among 16 firms, shows that it costs these companies anything from £5 to £396 every time an employee has to be replaced. The most realistic figure, Mr. Webster believes, is the cost per employee. "If we look at the cost per employee," he says, "we find that labour turnover adds from 5d. per week to £3 per week to the wage cost of each individual. In this series of 16 studies seven firms were adding 10s. or more per week to the wage cost per individual as a result of labour turnover."

Apart from wage costs, advertising for new manual workers can cost as much as £6 3s. 6d. per engagement, while one company has paid as much as £185 per engagement to get designers and draughtsmen. While they are being shown the ropes, new employees can waste as much as £31 each on scrap materials. At one company making aluminium foil, scrap costs per learner were as high as £151 for three months. Another firm, with 400 employees, was spending nearly £20,000 a year in overtime. It claimed that 90% of this was due to labour turnover.

Mr. Webster's conclusions were that turnover in manufacturing industries is in the region of 41% for men and women; men probably about 35% and women about 54% a year. "Even if we assume that half the turnover is unavoidable," he said, "the cost to the nation in economic and social terms is staggering."

Unfortunately Mr. Webster cannot suggest how labour turnover might be reduced. Even high wages and benefits in kind cannot guarantee loyalty. It seems that the waste caused by high labour turnover is part of the price we as a nation must pay for the privilege of freedom to work where we please. The only consolation is that the cost rises with the buoyancy of the economy; in other words when we can best afford to pay for it. Even if it were not so, it is unthinkable that people should be compelled by law to work where directed for the sake of a tidy economy. Freedom is too precious to be valued in £. s. d.

Sauce for the gander

NOT CONTENT with a dash of Worcestershire sauce with their food, many people like to drink it, heavily diluted with tomato juice. Now we learn of one hardy drinker who liked his Worcestershire sauce neat—in quantities of from one-half to a full bottle every day.

This passion for sauce nearly killed him. Reporting the case in the *British Medical Journal* recently, Dr. Alfred Douthwaite told how the man—a successful and happily married tycoon of 59—began to lose weight, have headaches, drowsiness, nausea and thirst. It was a case of chronic nephritis and the symptoms steadily worsened until the unfortunate man was only given three months to live.

At this stage he was put on the traditional diet for chronic nephritis, and only then did he mention his partiality for Worcestershire sauce. Could it do any harm? The startled doctor stopped the sauce at once and in a month the man was back to normal.

Is this a case of sauce for the goose being slow poison for the gander?

Gelatinous history

THE new year marks yet another centenary in the food industry. In 1857, the house of T. M. Duché and Sons was founded by one of the illustrious French refugees who settled in England during the nineteenth century. Tristan Mathieu Duché represented the Loire constituency in France, until he was exiled because of his opposition to the seizure of power in 1851 by Napoleon III.

Apparently M. Duché found business more rewarding than politics because he ignored the amnesty that was later granted and devoted his energies to the importing house he had opened in London. At first he imported edible and technical gelatines, fine leaf gelatines, glue, glacé cherries and other produce from France. Later members of his family opened a gelatine factory in Belgium, and still later, when heavy duties were imposed on imported glues and gelatines, the company began manufacturing near Liverpool. The Belgian factory continued to develop in other lines, and is a large manufacturer of heavy chemicals.

In 1879 Duché established an associated company in New York with branches in Boston and Chicago and an almond-shelling plant in California. Incidentally, it was through this American company that the first barrel of maize liquid glucose was imported into Britain.

Today, T. M. Duché and Sons (U.K.) Ltd., are well known throughout the food industry, and especially the confectionery and bakery industries, as manufacturers of gelatine and glue, direct importers of edible nuts, glacé cherries, agar-agar, preserved

ginger, desiccated coconut, tartaric acid, citric acid, groundnuts, egg albumen and dried whole egg, and as agents for gum arabic, cocoa butter and its substitutes, canned fruit and lecithin. They are still a private company, and one of their present managing directors is a direct descendant of the founder.

To mark the centenary, T. M. Duché have distributed a handsomely bound desk diary incorporating an *Economist* diary, together with a very comprehensive set of statistical tables on the Sudan supplied by Boxall and Co. Ltd., the largest gum arabic exporters in the Sudan, for whom Duché act as agents in this country.

Drive to the top

THE MAN who has probably done more than anyone else to make the "57 Varieties" (actually there are nearly 100) famous in Britain has retired from the managing directorship of H. J. Heinz Co. Ltd. He is Mr. W. B. Cormack, an Aberdonian who uniquely combines Scots shrewdness with American drive. His success can be measured by its effect on his company. Last year, Heinz' sales in this country rose by nearly 20%, making a record trading profit of £3,610,885.

Mr. Cormack joined Heinz as an office worker in 1920. Two years later he became chief clerk of the company's first Scottish branch in Glasgow (there are now four branches in Scotland). His work there led to his appointment in 1926 as the head of the purchasing department, and from then on he travelled widely throughout the world for Heinz.

In 1934, Heinz extended their operations to Australia, and Mr. Cormack was chosen to assist Mr. H. J. Heinz II to establish the first branch: a branch which so firmly established a demand for Heinz products in Australia that earlier this year a new £A4 million factory was opened near Melbourne. In 1937 he came home and was appointed a director of the British company. In 1940 he was made director of manufacturing and purchasing, and in 1946 he became vice-chairman, a title that was later changed to managing director. He was elected to the American board in 1953, the first time a non-American had gained this distinction.

Mr. Cormack is to continue with Heinz as a consultant and as a director of the British company. His recipe for success is "A fanatical enthusiasm for your job and for your firm," an enthusiasm which is evident in his recent comments on prospects in Britain. "The *per capita* consumption of canned goods in the U.K. is about two-thirds of that in Canada and less than half of that in the U.S.A. I am most optimistic about the future development of the processed food industry in this country."

Food flashes — 1956

SWEPT by storms and overhung with crises, 1956 was not a bright year for anyone and certainly not for the food industry. Fruit and vegetable canners, vintners and ice cream manufacturers suffered most from the weather, while we all need more petrol. The unfortunate chocolate manufacturers, whose sales declined during the sunny summer of 1955, found that in spite of the poor weather, which presumably favours chocolate eating, they had to bring down their prices in sympathy with fluctuating cocoa prices and yet continue using high-priced stocks.

Food research brought anything but encouraging news during 1956. Prof. Hugh Nicol gave a most uncomfortably vivid picture in our June and July issues of a protein-starved future with drastically reduced living standards. Not long after, two South African doctors announced that fried foods were apt to give us heart disease. Sometimes it seemed that the most elementary comforts are to be denied us. Even a nice hot cup of tea brings dangers of gastritis, according to a contributor in the *Lancet*.

Middle Eastern countries have their shares of troubles, but they must have been cheered by the decision of the Treasury to free stoned dates from import duty, an action which, according to a contemporary, "shone like a good deed in an incorrigibly naughty world."

The rest of the naughty world proved as unpredictable as ever. In Norway a dramatic critic found himself obliged to eat his hat in fulfilment of a wager, and did so as an omelette, garnished with cherries and pineapple. Japanese cinema-goers, for some years fervent admirers of the U.S.A., transferred their affections from dried octopus to popcorn. A Bombay newspaper correspondent reported that nowadays even the most saintly Hindu rarely eats little boys—in spite of the sad example of the British hotel which advertised for a roast cook. Australia launched a lively campaign to publicise her food exports, aided by a dazzling bevy of beauty queens—surely her most welcome export. They triumphantly proved their claims at the Olympic Games, catering for the varying tastes of athletes from 73 countries.

In Chicago, a gentleman invented a musical eating instrument—no doubt an ambitious form of tuning fork—while the American Meat Institute discovered that hot dogs are ideal foods for folks with dentures. A significant discovery was also made in the University of Minnesota by a patient researcher who, after 30 years of study, announced that strawberry jam is a better bait for mice than cheese. For the hard-bitten American executive a special pencil flavoured with Scotch, bourbon or rye was invented.

Each year seems to bring new examples of eccentricity in regard to food and 1956 was no exception.

PACKAGING PANORAMA

What to see at the International Exhibition

It is estimated that manufacturers of consumable goods expend 50 to 75 per cent. of their factory space, labour and money on packaging. This is a remarkable figure and it is one good reason why this month's International Packaging Exhibition will be the biggest show of its kind ever staged. At this exhibition food manufacturers will be able to examine the enormous range of materials, containers, closures and machinery offered by the ever-expanding packaging industry. Here is a guide to some of the exhibits which will especially interest the food industry. The exhibition will be open from Tuesday, January 22 to Friday, February 1 at Olympia, London.

MACHINERY

Albro Fillers and Engineering Co. Ltd.

(Stand 6, Row H, and Stand 7, Row J, Ground Floor, National Hall.)

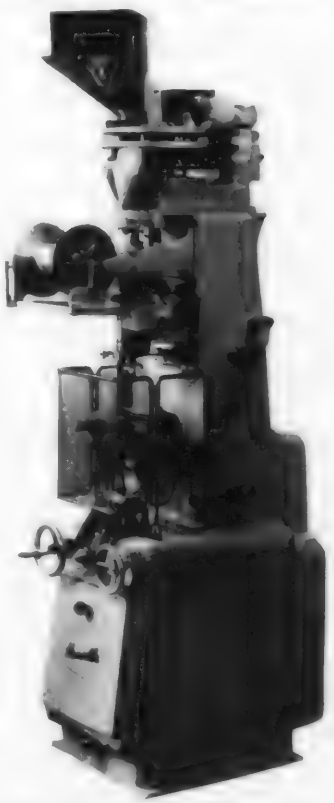
A comprehensive range of filling and capping machines for liquids, semi-liquids and powders, packed in all kinds of containers from glass bottles with wide or sprinkler necks to wide or narrow-mouthed tins or cardboard boxes, will be displayed. The machines will be demonstrated and automatic working lines will be laid out. One of these lines will include the C.T. 15 low vacuum operated automatic rotary filling machine for light liquids such as wines and spirits. It is fitted with a discharge conveyor, a corker and a new machine for automatically applying *Viskrings* to wine bottles. In the other unit will be a 15-head adjustable vacuum completely automatic filler for liquids, incorporating a conveyor with a fully automatic screw capping machine for metal or plastic caps.

Alite Machines Ltd.

(Stands 10 and 11, Inner Row, First Floor, National Hall.)

This company will show filling, mixing and sifting machines.

A three-in-one machine (model 16AS), made entirely of metal, blends, sifts and mixes in sequence. The preliminary blending is intended to ensure complete distribution of the ingredients before sifting. The sifting is effected by positive action brushes working in conjunction with a sieve. In the mixing chamber, mixing arms convey the materials from end to end to achieve complete uniformity.



Hansella-Transwrap bag forming, filling and sealing machine.

An automatic loose filling machine has been specially designed to meet the needs of manufacturers who require automatic filling of powders into rigid containers, tins, jars, cartons, etc., in quantities from ¼ oz. to 3 lb. Almost the whole of the machine is totally enclosed to eliminate dust, and all parts which come into contact with the powder are readily detachable for cleaning and, if necessary, sterilising.

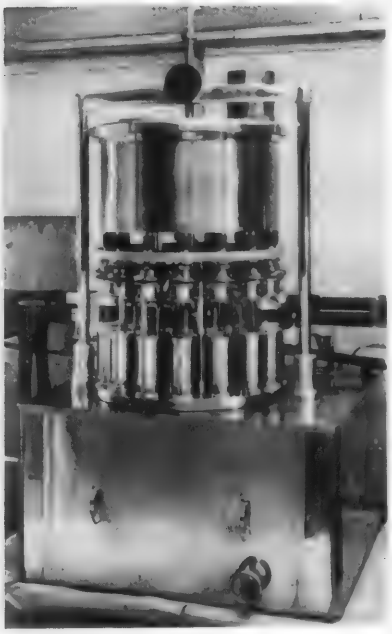
Other machines will include a distributor elevator unit, semi-automatic powder compression filling machine and a fully automatic powder tableting and compressing machine.

Bramigk and Co. Ltd.

(Stand 4, Outer Row, First Floor, National Hall.)

On view will be two of the range of high-speed automatic wrapping machines built by Sapal (Societe Anonyme des Plieuses Automatiques Lausanne) of Lausanne, Switzerland.

Type BA. One of the latest enclosed mechanism (continuous lubrication) types of wrapping machine for small bars of choco-



(*Left*) **Albro fully automatic vacuum operated dustless powder filling machine.**

(*Centre*) **Flexile Metal Co.'s tube filling machine.**

(*Below*) **"Souvidex" bag sealing machine.**

late and similar regularly shaped articles.

Size range: Minimum, 2·5 in. × 0·8 in. × 0·15 in. (approx.); maximum, 5 in. × 2·4 in. × 0·75 in. (approx.).

Operating speed: 120-160 completed wrappings per minute.

Type PRLP. A versatile foiling and wrapping machine to handle a wide range of high-class chocolates, sweets and novelties such as eggs, cigarettes, etc. The same machine will also wrap the normal chocolate bars, if required.

Size range: Length of piece, up to approx. 3 in.; width of piece, up to approx. 1·5 in.; chocolate cigarettes, from approx. ¼ in. dia.

Operating speed: 75 to 110 pieces per min.

Bramigk and Co. Ltd., Hansella Division

(Stand 2, Rows P and Q, Ground Floor, Empire Hall.)

Bramigk's Hansella Division will be exhibiting a selection of the modern self-service style package-making machines in which they specialise. There will also be a display of a few items of Hansella confectionery-making machinery.

The three principal packaging sub-divisions will each be represented by one or more machines, some of which will be shown for the first time in this country. These are the Transwrap sub-division combined bag forming, filling and sealing machines, the Hassia sub-division (for liquid satchet forming, filling and sealing, also for all types of strip packaging) and the Senning sub-division (over-wrapping and bundling machinery).

British Brehmer Ltd.

(Stand 2, Inner Row, First Floor, National Hall.)

A variety of wire stitching machines will be operating on this stand. Among them will be model 103 flat table stitching machine which automatically makes its own staples at the rate of 150 per min. It will stitch many different types of materials up to 1 in. thick, including wood, paper and hardboard. The folding box stitching machine, a recent addition to British Brehmer's range, will also be on view. It is supplied with a flat work table and gauges and the speed and neatness of the stitching will be demonstrated. Another newcomer is a polythene stapling machine. Using a circular type of copper-covered wire staple, the machine gives a firm seal to twisted transparent materials up to 7/16 in. diameter. This machine should be of particular interest to the food prepackaging market.

Dawson Bros. Ltd.

(Stand 8, Row Q, Ground Floor, Empire Hall.)

The main exhibit will be fully automatic bottle decrating and packing machines, which will be shown at work.

The Dawson "In-Line" fully automatic bottle decrating and recrating machine has been developed to eliminate the hand labour involved in removing bottles from crates prior to washing and replacing them in the crates after filling and labelling. A substantial saving in operating costs is assured.

In principle, the machine has a horizontal forward and reverse movement, hence the title "In-Line." Machines can be made with single, double or triple heads, dependent upon outputs required. Each head contains individual bottle grabs comprising three self-centring spring-loaded legs which grip the bottle underneath the rim holding it rigidly. It is necessary to provide separate heads for different sizes of bottles and crates.

Farrow and Jackson Ltd.

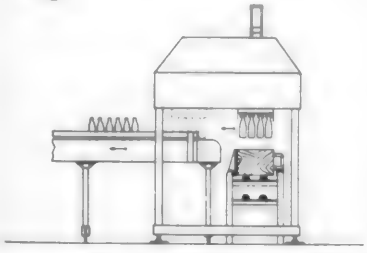
(Stand 7, Inner Row, First Floor, National Hall.)

A British made *Horix* filling machine will be demonstrated for the first time in this country. It will not be filling any particular product, but will run and will show all the various types of filling valves which can be used. There will also be a small test rig which will be filling liquid into a container, to show the actual operation of the filling valves.

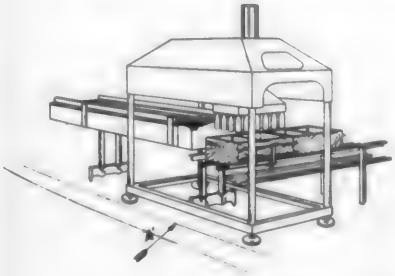
Felber, Jucker and Co. Ltd.

(Stand 1, Row O, Ground Floor, Empire Hall.)

The *Souvidex* machine, which incorporates a comparatively new process for the preservation of food, in which the air is withdrawn from the bag under vacuum and the bag is then either sealed under vacuum or filled with neutral gas such as nitrogen will be exhibited. Other machines on display will include a strip packaging machine for tablets, polythene and cellulose bag-making machines, and a powder wrapping machine for wrapping all types of powder or granules into envelopes, which is particularly suitable for making tea bags or powder sample bags.

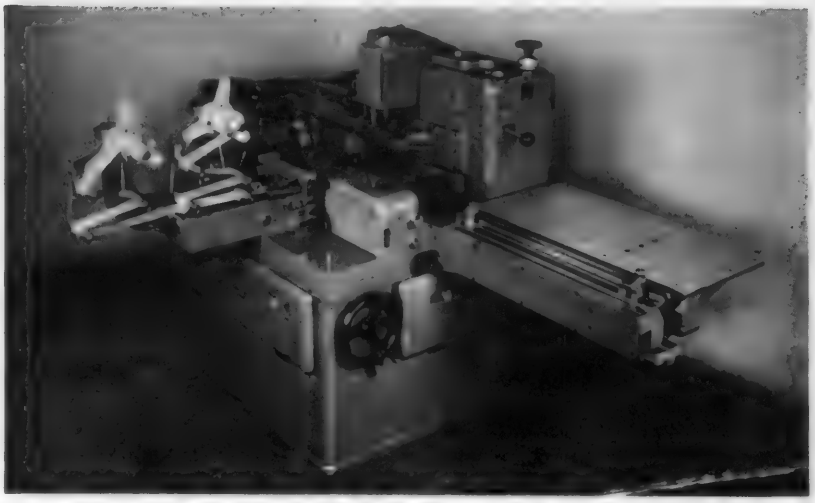


VIEW IN DIRECTION OF ARROW 'A'



DAWSON IN-LINE DECRATING & RECRATING MACHINE

Principle of the Dawson bottle crating and decrating machine



Sapal precision chocolate bar wrapping machine with enclosed mechanism and continuous lubrication.

Flexile Metal Co. Ltd.

(Stand 6, Inner Row, First Floor, National Hall.)

This stand will be divided into two parts, one devoted to collapsible tubes and the other to machines for tube filling and closing. The section on tubes will demonstrate the many different types of food which can be packed in tubes —from mayonnaise and butter to chocolate spread and tomato purée.

In the other section a new machine—the Kalix-Dupuy RV14—will be on view for the first time. This provides for the automatic feed of the tubes and is fitted with a photo-electric cell to provide automatic registration. Each tube is automatically turned before it reaches the filling station, and rotation is stopped by a photo-electric cell so that when the tubes are filled the design is central with the fold. It is said that speeds of 60 tubes per min. can be reached with unskilled operators.

The Kalix-Dupuy Super RV7 filler, an established model, will also be on view.

Thomas Hill Engineering Co. (Hull) Ltd.

(Stand 7, Row O, Ground Floor, Empire Hall.)

The principal exhibits will be bottle, jar, vial and container-cleaning machinery. All will be working exhibits, and the staff will demonstrate them. In addition to some smaller items of equipment the principal exhibits will include:

The new *Grangemouth* hydro bottle-cleaning machine, suitable for cleaning all sizes of returned bottles and for outputs up to 240 doz. per hr. This will be shown for the first time.

The *Grangemouth* power rotary rinser for rinsing new bottles of all sizes and types for outputs up to 240 doz. per hr.

The *Speke* (mark II) fully automatic vial cleaning machine, particularly suitable for penicillin and other antibiotic vials. Outputs 3,000 to 10,000 vials per hr. Chiefly used for vials up to 20 c.c. capacity.

G. D. Peters and Co. Ltd.

(Stand 4, Row L, Ground Floor, National Hall.)

A machine for labelling bottles in the vertical position will be on view for the first time. This is the *Pony Labelrite* labeller, described as a "straight through" machine with an output of up to 60 bottles per min. Bottles of the smaller sizes can be labelled two at a time, giving speeds of up to 120 per min. Another recent development to be exhibited is the *Convey-O-Mat* carton erecting machine, which is fully automatic and will set cartons from $\frac{3}{8}$ in. to $3\frac{1}{2}$ in. high. It will set from 30 to 60 cartons per min.

Purdy Machinery Co. Ltd.

(Stand 7, Inner Row, First Floor, National Hall.)

An extensive range of fully automatic and semi-automatic labelling machines including the newly developed bench type labeller to handle small containers and packages will be shown on this stand.

The exhibits will include one of the models of the *Horix* filling machines, which are now being manufactured in this country under licence, by Sheepbridge Equipment Ltd.

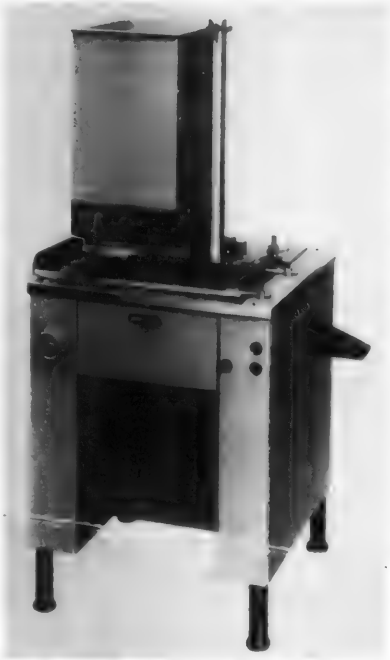
The company's materials handling section will display a utility light-duty conveyor, steel shelving, pallets and stillages.

SIG Wrapping Machines Ltd.

(Stand 3, Row L, Ground Floor, National Hall.)

Four machines will be on view here. They will be the HSK, an adjustable automatic wrapping machine for overwrapping cartons with cellulose film, the CB, a foiling machine for small chocolate articles, the CK, a wrapping machine for chocolate tablets and bars and the GBR, a wrapping machine for round biscuits.

The CB is a new rotating disc feed machine claimed to operate at the rate of 150 per min., working on the brush folding principle. It is suitable for regularly shaped goods such as circles and squares. It is equipped with a feed belt which carries each piece automatically to the depressions of the disc. It can easily be changed for items of a different shape.



Trapow's "Newman" cap lining machine.

D. Trapow and Co. Ltd.

(Stand 1, Row G, and Stand 3, Row F, Ground Floor, National Hall.)

This firm will be exhibiting various gumming, labelling, cap lining and vial and ampoule printing machines from their Newman range. The two latter types, models 2E and 1F, have never been exhibited before. The cap lining machine is designed automatically to insert wads into metal or plastic cups up to 50 mm. outside diameter. Cut-out devices are fitted to stop the machine when there is no wad or more than one wad delivered. It has a variable speed control from 50 to 150 per minute. The automatic vial and ampoule printing machine is designed for small cylindrical objects up to 1⅜ in. diameter. It has an off-set rotary system using ceramic or fast air-drying inks, Hopper feed and variable speed control from 50 to 100 per minute.

CONTAINERS AND MATERIALS

Betts and Co. Ltd.

(Stand 6, Row B and Stand 5, Row C, Ground Floor, National Hall.)

Tubed foods such as have been taken by members of the South Antarctic and a recent Himalayan Expedition will be displayed on this stand. The special feature of these tubes is the *Membraseal*, a blind end nozzle which has to be pierced by a special cap. This is said to ensure air tightness and proof against moisture and leakage at the nozzle end, the other end being sealed hermetically by a latex band on the inside of the tube. The food is further protected by a flexible internal coating on the tube to prevent any chemical action.

Other exhibits will include bottle capsules in tin, tin-coated lead, aluminium and plated aluminium

and decorated with a variety of designs and colours. Collapsible tubes and foils in tin, aluminium, lead and tin and lead alloys will also be on view. Finally, there will be a display of rigid extended containers.

Bowater Paper Corporation Ltd.

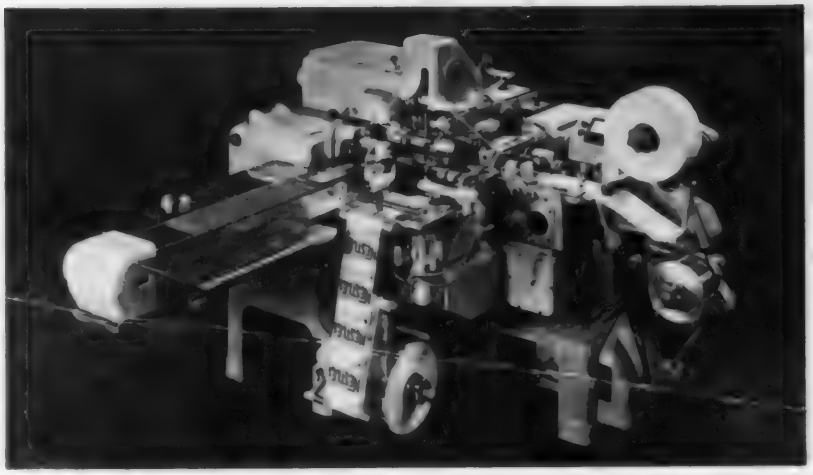
(Stands 4, Row K, and 5, Centre Row, First Floor.)

Bowaters will have two stands, one dealing entirely with the corrugated fibreboard cases of Bowater-Eburite (Stand 4) and the second displaying the products of Bowater Packaging Division.

Corrugated fibreboard cases printed in three colours are now being produced by Bowaters Fibre Containers, a subsidiary of Bowater-Eburite, and are the first to be made in one process in this country. All three colours are printed in one pass through a new printer-slotter manufactured by Henry Simon Ltd. Cases on show are for McVitie and Price.

Other displays will feature the fancy rigid and folding boxes, aluminium foil ware and capsules, paper crimp cups and baking and confectionery cases produced by subsidiaries of Bowater-Eburite.

A full range of pasted and sewn multiwall sacks and a complete service of filling and sewing machinery will be shown by the sack division of Bowaters Sales Company. Multiwall sacks are particularly recommended for economical and hygienic handling of foodstuffs.



SIG's Model CK wrapping machine for chocolate tablets and bars.

British Celanese Ltd.

(Stand 1, Row F, Ground Floor, National Hall.)

Recognising the increasing popularity of transparent plastics and self-service, British Celanese have made vision packaging the theme of their exhibits. They will display the latest designs in window-cartons, rigid boxes and laminated satchets made in *Clarifoil* film of all gauges. Many of these are widely used in the food industry. *Celawrap*, the "breathing" film specially designed for food wrapping, will be used for fresh produce in an open-topped refrigerator. Hand-operated, inexpensive equipment for overwrapping cartons with this film will be demonstrated on the stand. Window lamination will be on show for the first time.

British Visqueen Ltd.

(Stand 5, Row F, Ground Floor, National Hall.)

This exhibit will be a pictorial one to demonstrate the versatility of *Visqueen* polythene film. The exhibit will portray the inherent properties of the product, to emphasise that it is tough, transparent, waterproof, printable, mechanically strong, chemically resistant, non-toxic, and flexible at low temperatures.

John Dale Ltd.

(Stands 6, Row D, and 7, Row E, Ground Floor, National Hall.)

This company will be showing metal collapsible tubes, *Dalplas* plastic tubes, rigid aluminium extensions, tinplate and aluminium boxes, and compression and injection moulded closures and components.

PACKAGING CONTRASTS

W. Melhuish's "Cristo Crisps" are packed in cartons made from white-lined chipboard, manufactured and printed by 6-colour offset lithography by Hunt Partners, Ltd. Principal colours are brown, yellow and green.

Birds Eye's quick-frozen chicken pie is packed in a foil container inside a waxed carton with a waxed overwrapping.

Full colour photographs of the ingredients are reproduced on Symington's packs by Metal Box. The designs were printed in reverse by colour gravure on acetate which was laminated to paper coated with "Diothene" polythene film.

The dramatic black and gold pack for Alfred Bird's "Golden Spoon" cake mix is an adventurous break from traditional food packaging. In contrast to Symington's pack there is no attempt to create "appetite appeal." The mix is contained in an aluminium foil baking tin.

John Dickinson and Co. Ltd.

(Stand 6, Row F, and Stand 5, Row G, Ground Floor, National Hall.)

A wide range of packaging materials will be displayed on this stand. They will include bags made from paper, film, foil, cotton, *Pliofilm*, polythene, and laminated materials, *Seal-easi* bags, powder pockets and envelopes, carrier and millinery bags. Film, waxed and foil wrappings, semi-rigid transparent acetate containers and window cartons will also be on view with many different types of seals, stay papers, labels and sealing machines.

John Gosheron and Co. Ltd.

(Stand 3, Row B, Ground Floor, National Hall.)

Two new types of sealing tapes will be shown. *Twistseal* is a special cellulose film that has been bonded to fine strands of steel wire. It is described as suitable for sealing bags, *Transothene*, film and kraft, for colour identification on steel, and for stringing, banding and thonging. It is available in several colours and widths of 5 or 10 m.m. *Tielon* is made from 300 substance plain or coloured film with strands of high tensile rayon yarn bonded to it. This is also made in 5 or 10 m.m. widths and can be supplied in 10 colours or transparent. It is claimed to have a tensile strength of 33 lb. straight pull and 20 lb. when knotted. Unprinted it is said to be cheaper than cotton tying tape.

Henry Jackson (Liverpool) Ltd.

(Stand 3, Row GG, First Floor, Empire Hall.)

This firm will show polythene bags and liners made from film produced in their own factories, suitable for packaging a large variety of commodities, including chemicals, fertilisers, cattle foods, bananas, sugar confectionery and foodstuffs generally. The company's recently increased production capacity ensures quick deliveries and keen prices to any part of the world.

Hunt Partners Ltd.

(Stand 8, Row D, Ground Floor, National Hall.)

This stand will contain examples of the *Velvetone* process, a method of carton-production which prints and cuts the board in one continuous operation. This is claimed to enable regular running contracts to be supplied without holding large stocks and, by means of over-printing units, to change names of flavours, prices and types of contents promptly.

Samuel Jones and Co. Ltd.

(Stand 5, Row B, and Stand 4, Row C, Ground Floor, National Hall.)

This stand is intended to illustrate the whole field of labelling, showing the use of non-curling pre-gummed papers, choice of correct grades of adhesive with plain label paper for automatic labelling machines, pressure-sensitive labels and thermoplastic labelling. Among the labelling machines will be the new electric labellers, a two-length, electric tape shooter with foot control, a steam activator for use with delayed action *Heatfix* papers and an electric dispenser for tacky labels in sheets and rolls.

Key Glassworks Ltd.

(Stand 1, Row N, Ground Floor, Empire Hall.)

Samples of their many different types of glass containers, filled, capped and labelled by their numerous customers will be shown by Key Glassworks. They will also show representative samples of standard and fancy bottles and jars.

Sole selling agents for Key Glassworks are Ronald Gale and Co. Ltd.

The Metal Box Co. Ltd.

(Stand 2, Row F, and Stand 1, Row J, Ground Floor, National Hall.)

Metal Box will be showing all their usual products—cans, tins, boxes, packages and containers made of tinplate, aluminium sheet and foil, paper, cardboard and rigid and flexible plastics, all printed in colour by a number of processes.

Several improved types of food containers will be shown. One, which is described as especially

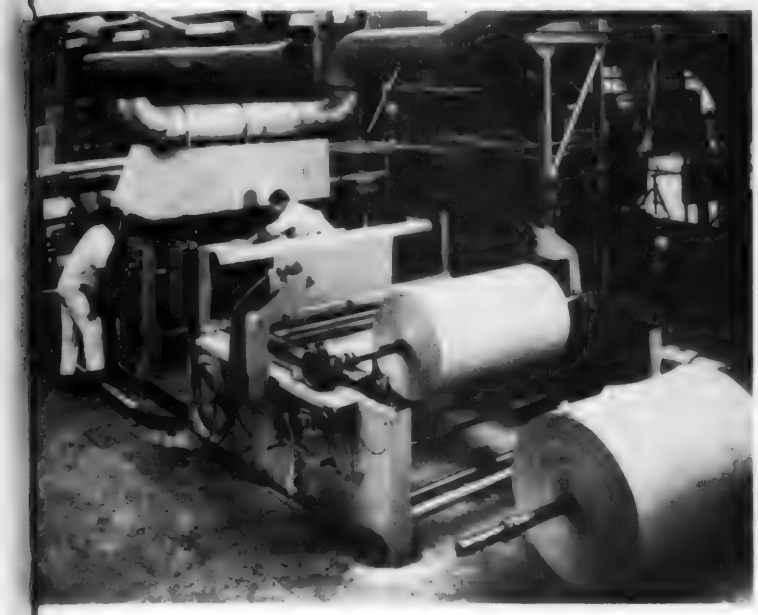
Food Packaging – the Next Five Years

What edible goods will the public be demanding in the next few years ahead? What will the food and edible goods trades have to offer—and how will it be retailed and packaged? What new containers and packages are in the offing which may change present merchandising methods? What changes in distribution and selling methods can we expect which will change (*a*) the type of goods offered to the public, and (*b*) the methods of manufacture and packaging at producing centres?

A serious attempt to answer such questions is to be made at a Convention ("Better Packaging Means Better Living") organised by the Institute of Packaging in conjunction with the Packaging Exhibition. Retailers, manufacturers, and packaging suppliers will, in separate sessions, state their needs and make their predictions, each telling the others what they are likely to want—and what they can supply.

The Convention will be concentrated in two days, Wednesday and Thursday, January 23 and 24 with three discussion sessions. It will open at 10.30 a.m. and in the first session, from 11.15 a.m. to 12.45 p.m. two speakers will discuss the subject "The Retailer Looks Ahead." The exhibition will be toured in the afternoon. Thursday's sessions will open at 10.30 a.m. with speakers sponsored by the Food Manufacturers' Federation. The final session will commence at 11.45 a.m. under the title "Satisfying Future Packaging Needs." The Convention will be summarised in the afternoon and the final address will be given by Lord Luke.

The feed-end of the polythene/paper laminating machine on which "Telcophane" is produced.



Captive slip lid composite container for biscuit manufacturers by Metal Box.

suitable for biscuits and dried foods, is the captive slip lid composite container. It has a body of spirally wound cardboard, which has the normal seamed-on tinplate bottom. The tinplate lid, the edge of which is curled outwards, differs from the normal type in that the main surface area is slightly countersunk, leaving a narrow, raised groove round the edge. This groove is just wide enough to take the top of the cardboard wall, which beds snugly into it. When the container is filled, the lid is put on and a simple mechanical device impresses an inward bead into the lid skirt. The impress is carried through to the cardboard, locking the lid and the body together. The beading is claimed to be a more efficient method of keeping out moisture than the normal slip lid container.

Also new are the flat tapered cans of 16 or 8 oz. capacity. These were designed for special packs such as steak and kidney pies. Both the bodies and ends can be decorated to eliminate the difficulty of labelling a container of this shape.

Metal Box pioneered beer cans for the British brewing industry, but the old type of cone top wax-lined can has now been largely superseded by the flat top can, which is produced in three sizes. Two of these, the 10-oz. and 16-oz. sizes are primarily for the home trade, and the 12-oz. size for export. An encouraging start has been made in introducing these cans, many brewers already using them in substantial quantities for the home market. The flat top can, which is treated internally with a special lacquer, gives a much improved result when compared with the old wax-lined container, and its specially constructed side seam gives adequate strength for the pasteurising temperatures normally used.

At present Metal Box has one manufacturing line for these cans, but its output is completely taken up, and a second line will be ready this month. All beer cans are printed with the brewers' traditional designs. This eliminates the labelling operation, while keeping alive the goodwill established by well-known labels.

Bags made of *Diothene*, the flexible polythene film produced by Metal Box, are being widely adopted for packaging fresh produce. They are being exhibited printed in up to 4 colours using aniline inks, or in two colours using gravure inks.

P. P. Payne and Sons Ltd.

(Stand 6, Row O, Ground Floor, Empire Hall.)

Recently introduced by the Payne organisation, the Carry-Pack Lifting Handle will be shown. A Carry-Pack lifting handle is a strip of gummed paper combined with a handle of strong cotton tape. The handle is easy to apply and can seal a package in 5 sec. A Carry-Pack handle applied to a box, carton or package lifts straight out. The handles are manufactured in varying lengths and colours, plain or printed.

Another exhibit will be the new method of a quick and easier opening of corrugated containers —containers so constructed that they may literally be "zipped" open cleanly and rapidly.

Reads Ltd.

(Stand 4, Row B, Ground Floor, National Hall.)

Metal containers of all types from a half-ounce tin to a 40-gal. drum will be on show. A special section will deal with highly decorated packs for the retail market, especially sugar confectionery, biscuits and other foodstuffs.

Another section will be devoted to bulk and trade packaging, including plain and decorated containers for liquids, powders, pastes and solids.

Reed Paper Group

(Stand 2, Row B, Stand 2, Row E, Ground Floor, National Hall.)

One of the largest stands at the exhibition will be that of the Reed Paper Group. Covering 2,700 sq. ft. and topped by a 30 ft. high suspended column of multi-coloured paper and boards, the stand will display the exhibits of six firms within the Group which manufacture or sell packaging products and materials.

Sharing the stand will be Reed Corrugated Cases Ltd., Medway Paper Sacks Ltd., Paper Converters Ltd., Cropper and Co. Ltd., Powell Lane Manufacturing Co. Ltd., and E. R. Freeman and Wescott Ltd.

A major feature of the Reed Corrugated Cases display will be a 44 ft. long panel decorated by John Minton, the well-known painter and illustrator, showing cases, trays and packs in corrugated fibreboard, "linen-finish" corrugated fibreboard and weatherproof corrugated fibreboard. The displays and decorations will be arranged in four sections with the following themes: wines and spirits, food, recreation and hardware.

The wine and spirit section will feature cases for home and export trade, carry-home packs for beer and spirits, beer cases and cordial trays. Attractively printed cases and trays and special Christmas packs will be shown in the Food Section and will illustrate the immense variety of packing cases required by the food industry.

A range of agricultural and horticultural packs including chick boxes, dressed poultry boxes, flower boxes, egg and apple cases, will also be on show and will be seen against a photographic background, in a series of shop windows set in a coloured panel.

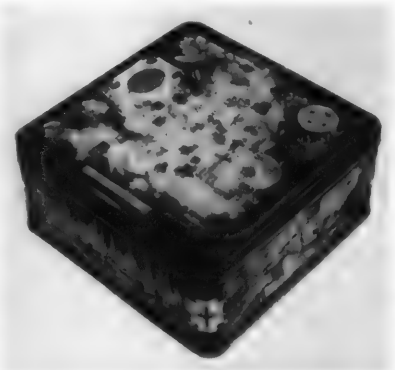
Colour will be the theme of the Medway Paper Sacks display.

Remploy Cardboard Box Group

(Stand 12, Centre Row, First Floor.)

The Remploy Cardboard Box Group is equipped to undertake the production of litho and letterpress collapsible cartons and display outers, collapsible boxes and containers from solid and corrugated board, rigid stitched boxes to post office and Ministry specifications, and all types of fancy covered boxes.

Seven Remploy factories offer a comprehensive service to all industrial users of packaging materials.



Lithographed tin box exhibited by Reads.

These factories are all in industrial centres: Blackwood, S. Wales; Bootle and Burnley, Lancs.; Dagenham, Essex; Longton, Staffs.; Manchester, Portsmouth and Sunderland.

H. G. Sanders and Son Ltd.

(Stand 12, Row GG, First Floor, Empire Hall.)

This stand will demonstrate the possibilities of food packaging in tubes.

A special display unit will illustrate the facilities which this firm can offer food manufacturers who will be invited to discuss their special requirements and to inspect internally lacquered tubes designed for food packing. They will also be able to see the Sanderseal end-sealed tubes, a new development said to overcome the problems of end seepage.

Rigid containers, pressings and components from the H. G. Sanders' press shop will form the remainder of the exhibits. These range from disposable office paste containers to high quality toilet and cosmetic packs. Also on view will be a selection of sprinklers and special closures.

Spesco Developments Ltd.

(Stand 15, Inner Row, First Floor, National Hall.)

Spesco recently bought the British rights of a new process. It will make possible the manufacture by the company of polythene containers made partly of thin film and partly of heavy mouldings.

Apart from their cheapness the new type containers appear to possess important advantages. As they will be fully collapsible, far less storage space will be required for them when they are not in use. Alternatively, an increased number of the containers could be stored without requiring additional space.

In addition, the feature of collapsibility coupled with their very low weight ensures that transport costs for the return of empty containers can be considerably reduced. This will be one of the company's main exhibits.

The Telegraph Construction and Maintenance Co. Ltd.

(Stand 7, Row C, Ground Floor, National Hall.)

This company will emphasise the suitability of plastics for protective packaging. In particular, they will be showing *Telcophane*, a plastic designed to satisfy the demand for a transparent material of high visual appeal, which is proof against water and water vapour and an efficient gas barrier. It is made from regenerated cellulose film and polythene. To bond the two materials securely use has been made of the extrusion coating technique, which gives a film of mechanical, physical and visual uniformity.

The new material is tough and flexible, with good burst and tear strength. It can be stored under deep-freeze conditions.

Telcophane can be readily heat-sealed to give a joint as impermeable as the material itself, and thus lends itself to the fabrication of

Two of Spesco's "fold up" polythene containers, each with a capacity of 5 pints.

vacuum packs. The vacuum pack is especially suitable for sliced cold meats and other goods which pack flat. The impermeability of the film ensures that the vacuum is held, no loss of moisture by evaporation takes place and the "fresh-cut" flavour is preserved.

The vacuum technique, while very desirable in the packing of meats, is not by any means essential in countless other applications of the material in small-scale packaging. Products for which it can be used, include tea, coffee or cocoa, spices, jam and mayonnaise. This type of pack enables the stiffness or fluidity of products like jams, or creams, to be communicated through actual handling, without damage to product or pack. Visibility and "feel" are, of course, valuable selling points in supermarkets and cafeterias, and here the *Telcophane* pack can play an important and effective part. It can be printed by the methods usually employed for cellulose film. The best effects are obtained by reverse printing, which involves printing on the cellulose film before it is coated with polythene, so that the print is ultimately sandwiched between the two materials.

The stand will also give prominence to *Telcothene*-coated papers, and in particular to coated Kraft, which is in ever-increasing demand for the fabrication of multi-wall sacks. The chemical resistance of *Telcothene*, its impermeability to water and water-vapour, its flexibility and anti-scuffing qualities make it an ideal protection for sacks intended to contain such materials as sugar and powdered foods generally.

Thames Board Mills Ltd.

(Stand 14, Inner Row, First Floor, National Hall.)

Displays will feature "Thames Board" for boxmaking, and *Fiberite* packing cases. In the last two years the company has extended its productivity, especially of *Fiberite* packing cases. It has now two packing-case factories, the original one at Purfleet and an entirely new one adjacent to its mills at Warrington. At Warrington also buildings are in course of erection for another boardmaking machine.

Also of interest to visitors to the stand will be displays of printed cartons made from Thames white-lined board. The *Fiberite* side of the company's activities will be represented by actual packs of goods of various kinds, with special reference to its ability to produce corrugated cases (in addition to the widely used solid cases) to suit particular types of merchandise.

Venesta Ltd.

(Stand 8, Row B, Ground Floor, National Hall.)

Among this firm's exhibits will be collapsible tubes from their new factory at Silvertown. They have developed a range of end-seals (*Venseals*) for these tubes. These come in four different types, heat-seal, pressure sensitive, latex and wax. Another development is automatic capping of tubes. An exhibition of packed tubes will demonstrate the increasing variety of foodstuffs which can now be packed in tubes.

Another new exhibit will be the *Zip-Rip* wrap for sections of cheese which is produced by Venesta for Bel Cheese. This wrap has a tab which rips off the complete top of the wrap so that the whole may be easily removed. In addition, wraps for sections of cheese with the label actually printed directly on to the foil are being exhibited, as well as the more conventional foil wraps with paper labels.

Viscose Development Co. Ltd.

(Stand 6, Outer Row, First Floor, National Hall.)

Viscose will display cellulose bottle and container closures well known as *Viskrings* and *Viskaps*. The display will be of interest to all bottlers, and will demonstrate the extensive use of these closures for securing corks, stoppers, screw caps and rubber plugs.

Recent developments in a new printing technique will make available for inspection new colour effects and two-colour printing on both sides of *Viskrings*. Before this development it was only possible to print simple matter in one colour, either red or black, on one side of a *Viskring*.

A new machine for the automatic and rapid application of *Viskrings* will be on show on Albro's stand (see p. 5).

Viskase Ltd.

(Stand 7, Outer Row, First Floor, National Hall.)

Casings for cooked and processed meats and skinless sausages will be on display. The Visking meat casings are filled wet so that they shrink closely and evenly to the meat, holding it firm and compact. They are available in red, amber or clear. High stretch, standard stretch and fibrous casings are available for meats packed after processing. Nojax casings for sausages are supplied in 40 ft. lengths of cellulose tube, ready shirred into 8 in. sticks. Costing only about one quarter the price of sheep casings, they make it possible for manufacturers to produce a fully enclosed pack of skinless pork sausages at an even cheaper price than the conventional banded pack.

Collaborative Study on the FIBRE CONTENT OF OATFEED

By N. L. Kent, M.A., Ph.D. and J. B. Hutchinson, B.Sc., Ph.D., A.R.I.C.*

Rigid directions for determining the fibre content of oatfeed and other oatmeal milling by-products are laid down in the Fertilisers and Feeding Stuffs Act, but different laboratory techniques can and do exist. A collaborative study was organised by the Research Association of British Flour Millers to ascertain the variations in results which may occur when the same sample is analysed by different laboratories. Thirteen laboratories took part. The results, which are described here, show that the regulations can lead to an undesirably large range of results being obtained on oatmeal by-products when analysed by a number of laboratories.

IN THE new Regulations of the Fertilisers and Feeding Stuffs Act, 1926, in operation from January 1, 1956, *oatfeed* has the following implied definition (p. 37): "the by-product of oatmeal milling consisting of hulls, floury materials, mealy matter, scree dust, all finely ground, and containing not more than 27% of fibre."

The fibre content of oatmeal milling by-products (whether defined as "oatfeed" or not) is now required to be declared in the Statutory statement (*Regulations*, p. 30),[1] and the limits of variation are defined as follows: "Fibre, one-eighth of the amount stated; provided that this limit of variation shall not operate so as to permit of the application of the name 'oatfeed' to any article containing more than 27% of fibre."

The procedure for the determination of fibre content specified in the new regulations is adopted from the earlier regulations, now superseded. Despite the apparent rigidity with which the regulations describe the procedure to be followed, differences in technique can still exist and must, indeed, be accepted as the regulations stand. It is important, however, that manufacturers and purveyors of oatfeed and other oatmeal milling by-products should have some idea of the extent of variation in results that may be obtained when the same sample is analysed for fibre content in a number of laboratories. It was in order to obtain such information that the collaborative study on the fibre content of oatfeed, now being reported, was organised.

A somewhat similar study of the prescribed method of estimation of fibre content was carried out by Hall *et al.*,[2] but the materials analysed had relatively low fibre contents, in the range 6-15%.

The general arrangement of the study was that three samples of oatfeed, obtained in September, 1955,† were subdivided in the laboratories of the Cereals Research Station, St. Albans, and a portion of each sample sent to each collaborating analyst. Analytical results for fibre and moisture contents were remitted to St. Albans where they were put together for statistical analysis and comparison.

Collaborating laboratories

There were 13 laboratories taking part in the study, each of which reported results on every sample. Laboratories in England, Scotland, and Northern Ireland were represented. Five were laboratories of official analysts or public consultants; six were laboratories attached to mills where oatfeed is manufactured commercially; one was the laboratory of a Research Institute; and one was the analytical laboratory at the Cereals Research Station. Throughout this report the laboratories will be referred to by code numbers.

Procedure

In order that the study should as far as possible make use of natural working conditions in the several laboratories, and provide a fair comparison between results that might be expected in routine work—the main object of the study—no suggestions were made to collaborating analysts regarding the way in which the work should be performed, except that each collaborator was requested to carry out fibre determinations by the official method as described in the Fertilisers and Feeding Stuffs Regulations. No request was made that any given number of operators should take part, nor that any given number of replicate determinations should be made, although collaborators were informed that the separate reporting of individual figures when replicate determinations had been made would be much appreciated. The general approach was to urge collaborating analysts to carry out the work in the usual way and not to depart from custom merely because they were taking part in a collaborative study.

In view of these limitations, it was not possible to plan the entire study in such a way that the results would be in an ideal form for statistical analysis. It was anticipated that some laboratories might be able to supply results obtained by only one operator and might not wish to submit unassociated

* Both of the Research Association of British Flour-Millers, Cereals Research Station, St. Albans.

† In September, 1955, when this study was originated, the top limit of 27% fibre content did not apply to oatfeed. The name "oatfeed" has been retained throughout this paper although, as will be shown from the results, not all the samples analysed can now be so described.

replicate determinations made at different times: in such cases each sample would have to be assigned a unique figure per laboratory. However, if the results were then arranged in a two-way table for samples and laboratories they could still be examined satisfactorily by a statistical analysis of variance, using the first order interaction "samples × laboratories" as an estimate of error for determining the significance of the differences between laboratories, a main purpose of the work.

Nevertheless, it seemed desirable to obtain a more direct estimate of error replication within the laboratories themselves, between and within individual operators. This need was satisfied by replication of the samples.

The samples

Three samples of oatfeed were obtained from three different mills, and each was subdivided as follows:

(i) A sample of oatfeed (I) from the first mill was thoroughly mixed and divided into 14 portions of 4 oz., each of which was labelled "A."

(ii) A sample of oatfeed (II) from a second mill was thoroughly mixed and divided into 46 portions of 4 oz., of which 14 chosen at random were labelled "C," 14 more chosen at random labelled "F," and the remainder reserved for a sampling study.

(iii) A sample of oatfeed (III) from a third mill was thoroughly mixed and divided into 42 portions of 4 oz., of which 14 chosen at random were labelled "B," 14 more chosen at random from the remainder "D," and the last 14 "E."

Thus, packets A, B and C were representative of three distinct samples of oatfeed; packets D and E were replicates of B, and F was a replicate of C.

Each analyst was furnished with a set of six packets, A to F, individual packets being chosen at random from among those similarly labelled.

The samples were sent away in paper envelopes, and no attempt was made to keep the moisture content constant; however, analysts were requested to determine moisture content in addition to fibre content, and the fibre results here reported have all been converted to 10% moisture basis, using the moisture values as reported by the several analysts. The Regulations[1] prescribe that moisture content shall be determined by loss of moisture at 100°C. without further description of technique.

RESULTS

Moisture content

The average moisture content and range of values reported were as follows:

	Samples					
	I	II		III		
	A %	C %	F %	B %	D %	E %
Lowest	8·4	8·7	8·5	8·3	8·3	8·4
Highest	10·1	9·9	9·9	9·9	10·1	10·2
Mean of 13	9·1	9·2	9·05	9·05	9·1	9·05

The moisture range among the six packets of a set sent to a particular laboratory did not exceed 0·4% in respect of 9 laboratories; the largest range was 1%.

Fibre content

The mean values reported by each laboratory for each of the six packets representing, among them, the three samples, corrected to 10% moisture content basis, are shown in Table 1.

The ranges of laboratory mean values were as follows:

2·1% (26·7-28·8%) for packet A of sample I;
3·2% (24·2-27·4%) for packets C and F of sample II;
2·7% (27·5-30·2%) for packets B, D and E of sample III.

The number of operators who examined the samples varied from one to five in the various laboratories and totalled 26 operators. The mean values for each of the six sample packets obtained by the 26 operators are charted as a frequency distribution diagram in Fig. 1, the overall range of operator-packet mean values being 25·7-29·2% for sample I (packet A), 23·1-27·4% for sample II (packets C and F), and 26·7-31·65% for sample III (packets B, D and E). All the values fell within the ranges "mean ± one-eighth."

Table 1. Mean fibre content of three samples of oatfeed determined in 13 laboratories

(values expressed on 10% moisture content basis)

Laboratory No.	No. of Operators	Sample I Packet	Sample II Packets		Sample III Packets			All
		A	C	F	B	D	E	
1	1	28·8	25·8	27·4	29·7	30·1	29·4	28·5
2	2	28·5	26·3	25·1	29·8	30·2	29·0	28·15
3	1	28·8	26·8	24·95	28·8	28·4	29·3	27·8
4	5	28·2	25·6	25·9	28·9	29·2	28·5	27·7
5	3	28·35	25·6	25·4	29·1	28·8	28·85	27·7
6	2	28·35	25·3	25·45	28·7	28·6	29·5	27·65
7	2	28·25	25·9	24·8	28·6	28·1	28·6	27·4
8	2	28·75	25·55	26·45	28·05	28·0	27·5	27·4
9	1	27·65	25·1	25·1	28·35	28·85	28·8	27·3
10	1	28·1	25·1	24·6	28·6	29·4	28·2	27·3
11	1	27·85	25·2	25·1	28·55	28·7	28·1	27·25
12	1	27·8	24·8	24·8	28·1	27·8	27·7	26·8
13	2	26·7	24·4	24·2	27·5	27·5	27·7	26·3
Mean for Official Analysts and Public Consultants		28·2	25·7	25·4	28·7	28·7	28·7	27·54
Mean for others		28·2	25·4	25·25	28·7	28·8	28·45	27·45
Mean all		28·2	25·4		28·7			27·50
Range for laboratory means on individual packets		2·1	3·2		2·7			

In the case of sample III, for which 78 independent values (3 values from each of 26 operators) are available, over 50% of the values fell within the narrow range 28·0-28·9%, whilst 71% of the values fell within the slightly wider range 28·0-29·4% fibre content.

DISCUSSION

If the average values are accepted as the best estimate of fibre content, then the results recorded in Table I indicate that sample II (packets C and F) complies with the statutory definition of oatfeed whereas samples I and III do not. However, the results show that unquestionable differences in fibre content are obtained when a number of laboratories analyse subsamples of the same material. Laboratory No. 1 consistently reported values well above the average for all the samples, whilst laboratories Nos. 12 and 13 just as consistently reported values below the average for all samples.

All 13 of the analysts would have rejected sample III as not complying with the Statutory definition of oatfeed, but one analyst (No. 13) would have passed sample I, and another analyst (No. 1) would have rejected sample II on the result of his analysis of packet F.

The differences between results on the same sample may be regarded as being due to two main causes:

1. Differences in technique or interpretation of the official method for fibre determination, both between laboratories, and also between operators working in the same laboratory.

2. Basic heterogeneity of the material to be sampled.

The heterogeneity arises from the fact that oatfeed, though a dry, free-pouring, readily mixed powder, is a blend of a number of by-product streams which differ from each other both in particle size and in fibre content. In handling the material, for subdividing or subsampling, there is danger of segregating the particles by size. Thus, among the various subsamples of the one material, obtained by subdividing the bulk in the laboratory at St. Albans, there might be small but real differences in fibre content; likewise, between each successive 2 or 3 g. portion weighed out for analysis from a single packet by an individual operator there might be similar real differences in fibre content owing to non-uniformity of the material, though fortunately these latter become automatically a part of the error of replication.

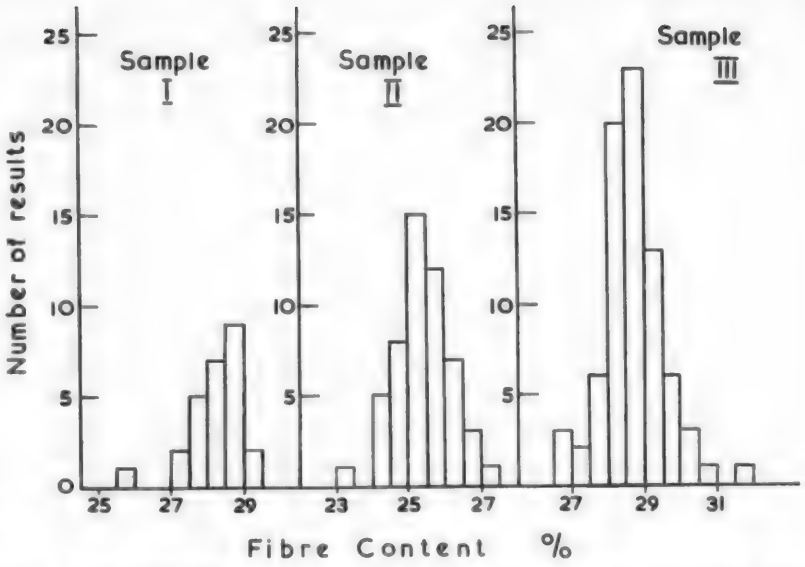


Fig. 1. Frequency distribution diagram of the mean values for fibre content of each of the one, two or three subsample packets of three samples of oatfeed obtained by 26 operators working in 13 laboratories. There are 26 values for sample I (packet A), 52 values for sample II (packets C and F), and 78 values for sample III (packets B, D and E).

It is of some importance to ascertain whether the observed differences between the laboratories are "real," *i.e.* due to variations in method, or whether such observed differences can result entirely from the distribution of the large sample among the different packets purporting to represent it. This question can be settled by submitting the full results obtained by 26 operators, of which a summary is given in Table I, to the statistical process of analysis of variance. The variations ascribable to differences between samples, differences between laboratories, and differences between operators have been separated and compared with the appropriate statistical terms for error and heterogeneity between packets of the same sample to decide their significance. Results of the analysis are given in Table 2.

The first order interaction for "samples × laboratories" contains automatically a component of variance for heterogeneity between packets because each laboratory handles only its own set of packets: it is thus a suitable valid estimate of error against which to test the main effect between laboratories—even if differences distributed at random about the mean for the whole sample do exist between the packets. By contrast, the interaction "samples × operators within laboratories" contains no such term, because the operators within any one laboratory handle the same set of packets. As, however, this latter interaction does not differ significantly from the former, the differences, if any, between the various packets of the same sample must be quite small.

The mean square "between laboratories," when tested against the appropriate interaction term, is highly significant, and it must be concluded from this result that differences between fibre results reported by various laboratories on the same sample are real, and are not due entirely to the heterogeneity of the material.

The mean square for differences between operators within laboratories is significantly greater than its appropriate error term, the interaction between samples and operators. However, inspection of the data shows that almost all of the "between operators within laboratories" variance is contributed by operators in laboratories Nos. 2 and 10 (mean square 3·20; 3 D.F.), the mean square for differences among the remaining operators being very small indeed (0·146; 10 D.F.) as would be expected.

The combined interaction term when tested against the error term for "replication within operators and samples" reaches only the 20% level of significance, but as the interaction term is numerically the larger it has been deemed wiser not to combine the two together.

The error term for replication can be further split up into the two parts due to replication of sample II among packets C and F, and replication of sample III among packets B, D and E, respectively, and it is seen that variation due to C/F replication was significantly greater than that due to B/D/E replication, suggesting that sample II was possibly more difficult to subsample uniformly than was sample III. However, a large proportion of the variance due to C/F replication was provided by a single operator in laboratory No. 10: if his results are omitted, the mean square terms reduce to 0·385 (25 D.F.) for C/F, and 0·25 (50 D.F.) for B/D/E, which do not differ significantly. There are no other large individual contributors to these mean squares, and it would thus appear that sample II is not more difficult than sample III to subsample uniformly.

As with the first order interaction, the error variance term for replication can also be divided into two independent portions, the ratio of which is an indication of the importance or otherwise of the inter-packet variation. The one term, replication between packets of samples II and III within the laboratory (summed over the 13 laboratories: 39 D.F.) automatically contains a component corresponding to the inter-packet variance, whereas the other term, an error interaction between replicate packets and operators within laboratories (also 39 D.F.) does not (because the operators in any one laboratory handle the same set of packets). Here, again, the variance ratio indicates the unimportance of the inter-packet term.

As a further check on the extent of variation among packets of the same sample that might result from subdivision of the original bulk in the laboratory, 12 of the original 46 packets into which sample II was divided were reserved for a special sampling study. These 12 samples were submitted to analysis under code in the laboratory of the Cereals Research Station, where one operator (who had already taken part in the collaborative survey) determined fibre content of each sample on two separate days. The mean values for the 12 samples ranged 24·9 to 25·8% about a mean of 25·3% (against the earlier mean of 25·45% for packets C and F obtained by this particular operator). The variance "between packets" was not significantly greater than the variance due to replication, thus confirming the earlier evidence as to the unimportance of differences between several packets of a sample. Thus it appears that the variation between replicate packets of the same material used in the subsidiary study is not likely to be large: on the other hand, the range for laboratory means in the collaborative study (24·2-27·4% of fibre) was more than three times as large as the range of individual values in the subsidiary study, and the variation must be due largely to causes other than heterogeneity of the material.

Although sampling difficulties do not appear to present any serious obstacles to the determination of fibre content of dry, finely divided oatfeed as normally purchased, any failure to observe the Regulations regarding sampling (ref. 1, pp. 9 and 10) would undoubtedly give rise to additional errors and would be likely in the long run to be prejudicial to the interests of the miller because of the lack of any tolerance limit at the 27% fibre level.

From the results of the collaborative study it appears that the standard deviation of the chosen result for each package is 1·0% of fibre; this may be interpreted as meaning that the difference between results on packets of a single sample obtained in any two of the laboratories may be expected to vary up to 3% of fibre. In effect, this implies, from the millers' point of view, that while the maximum fibre content of oatfeed is fixed at 27%, the miller should aim at the production of oatfeed with a fibre content not exceeding 24% (on 10% moisture content basis).

As a further comment, the actual ranges for the chosen values on individual packages encountered among the results from the five public analysts and consultants were 2·1, 3·2 and 2·6% of fibre for samples I, II and III, respectively, and among those from the other eight laboratories 1·1, 1·85 and 2·7% for samples I, II and III respectively. Both groups of analysts obtained virtually identical mean values in the case of each of the three samples (28·2 and 28·2%

Table 2. Analysis of variance of the fibre data obtained by 26 operators

Source of variation	*D.F.*	*Mean square*	*"F" ratio and significance*
Samples	2	174·54	
Laboratories	12	3·11	6·5***
Operators within laboratories ...	13	0·86	2·4*
First order interactions:	(50)	(0·42)	1·13 (p = about 20%)
Samples × laboratories	24	0·48	
Samples × operators within laboratories	26	0·36	
Replications within operators and samples:	78	0·37	
(due to C/F)	(26)	(0·55)	1·97*
(due to B/D/E)	(52)	(0·28)	
Total	155		

for I; 25·55 and 25·3% for II; and 28·7 and 28·65% for III).

Variations in laboratory technique

Information supplied by the collaborating analysts enables an assessment to be made of the importance of a few of the various factors that might have an influence on the fibre results.

Effect of grinding. The directions in the F. and F. S. Regulations for preparation of the sample permit the analytical work to be carried out on the sample as received if it "is a fine condition and passes through a sieve having apertures about 1 mm. square." If not, it should be powdered to pass that sieve. The present samples were borderline cases: the proportion of the sample that passed through a No. 20 grit gauze (1·05 mm. aperture width) varied from 97% for sample I to 98·5% for sample II. Seven of the collaborating analysts reported that they further ground the samples before weighing out aliquots, whereas the remaining six analysts did not grind the material.

Comparison of the results obtained by the two groups is as follows:

	No. of labs.	*Average fibre content of samples* I %	II %	III %	All %
Unground	7	28·3	25·6	28·7	27·5
Ground	6	28·0	25·2	28·7	27·3

The overall difference, 0·2% of fibre, due to the method of preparation of the sample is small in comparison with differences between laboratories, and is obviously insignificant. It may be concluded that for these particular samples there is little difference in result whether the grinding is included or omitted—possibly because the samples were already in a state of relatively fine subdivision.

Fat extraction. All but two of the laboratories reported that fat (about 2% of the sample) was extracted before carrying out the fibre determination. However, one laboratory carried out determinations both with and without fat extraction, with results as follows:

Method	*Average fibre content of samples* I %	II %	III %	All %
Fat extracted ..	29·0	25·95	28·8	27·9
Fat not extracted	28·6	25·8	28·9	27·8

The effect of extracting the relatively low quantity of fat in the samples is clearly negligible in the case of this particular laboratory.

Sample weight. The regulations for carrying out fibre determination call for 2 or 3 grams to be weighed for analysis. The actual weight of material taken for analysis was recorded as 2, 2½ or 3 g. by various collaborators. Average results, grouped according to the weight of material used, were as follows:

Sample wt. g.	*No. of labs.*	*Average fibre content of samples* I %	II %	III %	All %
2	6	28·1	25·25	28·4	27·25
2·5	4	28·1	25·4	28·9	27·45
3	3	28·45	25·7	28·9	27·7

There is a suggestion of slightly higher fibre results when larger aliquots are taken for analysis. Hall *et al.*,[2] carrying out a collaborative study of the fibre method, also reported that the average fibre content (for palm kernel cake) was 0·5-0·7% higher when 3 g. aliquots were used than when 2 g. aliquots were used. However, the differences are relatively small, and the number of laboratories in each group is scarcely large enough for reliance to be placed on the observed differences.

CONCLUSIONS

When one, two or three subsample packets of three samples of oatfeed (approximately 27% fibre content) were analysed for fibre in 13 laboratories in Great Britain, the average values recorded by the various laboratories ranged 2·1, 3·2 and 2·7% of fibre content, respectively, for the three samples.

Independent values obtained by individual operators on sub-sample packets of the three main samples had a wider range, *viz.* 3·5, 4·3 and 4·95% of fibre content, respectively, for the three samples. However, none of the values lay outside the ranges, mean ± one-eighth.

It was shown by statistical analysis of the data that differences between results obtained by the various laboratories were not due entirely to heterogeneity of the material, but are probably ascribable to differences in technique or in interpretation of the official method.

Neither grinding nor fat-extraction of the material before fibre determination appeared to influence the results in any consistent way.

Based on the figures obtained by the 13 laboratories for each of the samples, it may be expected that the difference between results on a single sample declared by any two of the laboratories will vary up to about 3·0% of fibre.

It is concluded that the regulations for fibre determination, as presently worded, give opportunity for variations in interpretation of the method leading to an undesirably large range of results being obtained on oatmeal milling by-products when these are analysed by a number of laboratories.

Acknowledgments

This work has been carried out as part of a programme of research for the Oatmeal Millers' Associations of Scotland, England and Wales, and Northern Ireland. The authors wish to express their thanks to the analysts who took part in the work, namely:

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The Work of the Food Technologist

"WHAT are loosely described as 'Things done to foods by manufacturers,' are not harmful, and they are appropriate to our type of civilisation."

This was said by Prof. A. C. Frazer, professor of medical biochemistry and pharmacology in the University of Birmingham and president of the British Food Manufacturing Industries Research Association, when he conducted a one-day school there on "Food Technology and Health" at his University last month.

It is the object of food technology to ensure and encourage the following: (1) clean food, (2) better storage, (3) wider distribution, (4) off-season coverage, (5) improved standards of manufacture, (6) increased palatability, and (7) easier use.

Over 600 food additives were in use in this country, which were designed to promote one or more of these results.

These observations were illustrated with reference to samples of bread which were sliced and set against a control sample which was untreated, complete with their dough-testing graphs. The samples were designed to show the effect of additives whose purpose was to give better baking qualities, larger size, and better texture.

In general Prof. Frazer agreed with the findings of the Cohen Report on the "Composition and Nutritive Value of Flour," and suggested that bread was singled out for special attention in the studies of the school because it affected practically everybody.

He referred several times to the importance of not considering food technological problems in isolation, but in relation to the diet of the individual as a whole.

Several of the students present followed employment in food manufacture and catering, and they were especially interested in a series of demonstrations.

Food additives

The first was designed to show the effect of the addition of lecithin to liquid chocolate at the melangeur stage, which changed the state of its viscosity, and gave it the right flow for easy control in manufacture, especially in dipping, enrobing, and moulding.

In another experiment, an unnamed waxy sorbester was added to a beaker of egg white, and the manner in which it interfered with the whipping properties was demonstrated against an untreated control. The practical application of research on these lines was related to the stabilisation of the frothing capacity of beers and soft drinks.

Jellies treated with harmless dyes (Cochineal and a green vegetable dye) were on view. The lecturer said that there were several chemical dyes which were suspected of causing tumours, and their use was forbidden in this country.

One of the most interesting of the display samples was two plates of potatoes, which had been peeled at the same time. One showed the usual discoloration, and the other sample, which had been treated with 20 p.p.m. sulphur dioxide, showed no surface change.

After a lengthy consideration of bread improvers, the next subject which was given a fairly full exposition was the recent work on the hydrogenation of fats, and the relation of the unsaturated fats in the human diet to atherosclerosis.

Testing procedures

The final session of the school was given over to a detailed attempt, with the aid of lantern slides and charts, to answer the question, "What happens when a new chemical for use in food manufacture is suggested, and adequate testing before use is desired?"

First its possible dangers, if any, are assessed in terms of direct and indirect effect. Next its physical and chemical properties are determined, including the level of purity, the chemical analysis, and the main impurities likely to be present.

Then the technological data are reviewed, including the proposed use, the action on the food, and the average probable consumption of the typical young adult.

In the following stage, the biochemical data is built up in relation to such questions as the absorption and metabolism, and the route and rate of elimination.

The pharmacological data are then examined, and tests made of the effect on weight, lactation, and fertility, with animal subjects. Finally, the nutritional data are considered and any specialised tests which might seem appropriate are applied.

The thoroughness and accuracy of the work of the food technologist, when expounded in this way, was very impressive, and the students were made to feel that the technologist was not only able to help and reassure the manufacturer, but to provide safeguards for the consumer at the same time.

But it has to be borne in mind that practically every individual has a food allergy of some kind, and everybody has a food pattern, mainly due to heredity, which determines food preference, digestability, and nutritional value.

There was an interesting question and discussion period, during which the lecturer expressed the opinion that acrolein would not be formed normally during ordinary cooking processes. Some of the students said they had detected it in fish fryer's premises. Its toxic effects were emphasised.

The question of agene was also brought forward, and it was suggested that although it was known to cause running fits in dogs and rabbits, no clear case of such causation in a human being had been observed. It was nevertheless wise to ban the use of this gas in bread manufacture.

The value of the work of the food technologist in conserving the vitamin content of foods was also underlined, and the contribution of this kind of research to help to prolong the expectation of life was considered.

NORMAN BRAMPTON.

Brewing

By W. A. Whitley*

Barley and hops ★ Malting ★ Hazy beer ★ Microbiological research ★ Analysis of raw materials ★ Mechanisation ★ Canned beer

THE climatic conditions of the past year have had their effects on the Brewing Industry in two ways. Firstly, since the raw materials depend on agriculture, the quantity and quality of these commodities have suffered from the rain and later storms. Secondly, due to the lack of sunshine and heat, the consumption of the finished product has declined.

Materials

Although—according to estimates available at the time of writing—the acreage devoted to barley is slightly higher than that of last year, the crop, owing to unfavourable growing conditions and losses due to damage, is lower than the previous record one, and the yield has been given as 21·9 cwt. per acre, compared with 25·4 cwt. for 1955. This, however, is equal to the average of the past five years, and although the quantity acceptable for malting will not be in excess of the demand to the same extent as last year, nevertheless there is expected to be sufficient to meet current demands. The swing away from the older types of malting barley continues, and in some of the barley-growing counties the percentage of Proctor has reached as high as 80, although in Scotland, Herta and other Scandinavian varieties are grown to a much greater extent and make up between 50-60% of the varieties there.

The experience gained in the malting of Proctor last season should ensure that this year's malt will be better modified than some produced at the beginning of the previous season, since it is now recognised that Proctor is a new variety which requires a new technique. It must not be forgotten, however, that last year's Proctor was grown under very favourable conditions, and the excellent reports given on its value as a brewing material may require modifying when the results of this year's crop, grown and harvested under unfavourable conditions, become known.

Most of the malt produced in the early part of the season has been made up from held-over barley, since, due to harvesting conditions, much of the new crop had a high moisture content and required drying with its subsequent resting period; also, dormancy was very pronounced with some lots. Early results seem to indicate that the extracts will be lower than last year, but, with a higher nitrogen content—if the malt is modified properly—there should be a gain in the health of the yeast and consequently an improvement in beer quality.

The crop to suffer most, however, has been the hop. In East Kent, which normally provides the bulk of the best quality Golding growths, the crop will not be more than half of last year's output. Over all, the estimated reduction in last season's total is about 25%. How this will affect the brewer depends on how much of the previous year's growths is in cold store, and whether the present trend in consumption of beer continues. Reports from the Continent and America indicate that there will be little hope of making up deficiencies from these quarters.

New varieties

Work continues in the search for new varieties of barley and hops. Workers in the barley field aim at types giving higher yields, stronger straws and increased resistance to disease, combined with early ripening and good quality. Brewing trials have continued, and the varieties arousing most interest, apart from Proctor, are Maythorpe and Beorna, the latter being chiefly of interest to Scottish growers. Maythorpe, which is a Maja-Goldthorpe cross, is finding favour in some quarters, as it has a larger berry than Proctor and shows a high extract when malted. This variety, along with Proctor, is included in the list approved by the European Brewery Convention Barley Committee for their 1956 trials. Since the hybridisation of barley is slow in yielding results, work is in progress in several parts of the world with a view to producing mutations by exposing the grain to various radiations before sowing.

Work still continues in the production of wilt-tolerant varieties of hops which are acceptable for brewing. The Institute of Brewing Hop Trials continue, and as several breweries, together with the Brewing Industry Research Foundation, collaborate in these trials, the results are valuable in deciding

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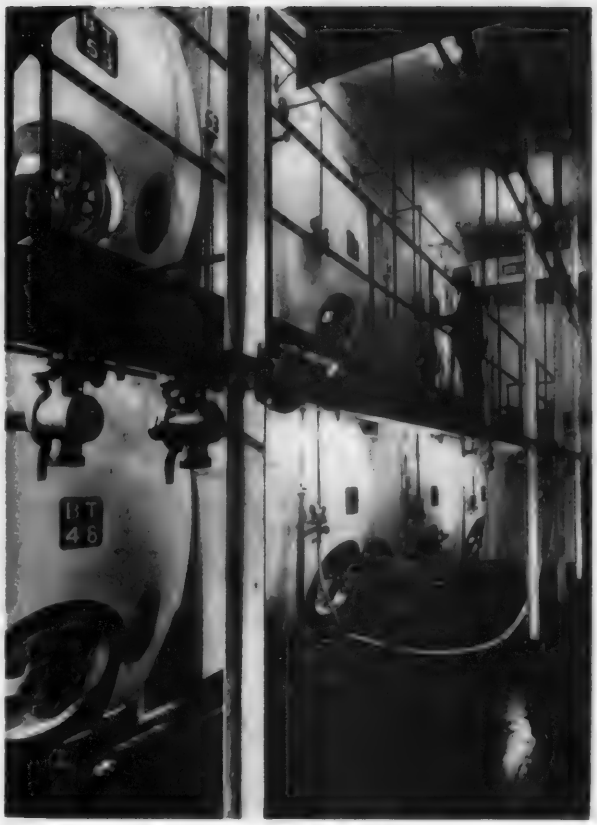

Higher demand for canned and bottled beer necessitates increased storage space. Here is part of a new cold store built at Truman, Hanbury's London brewery. The tanks have a capacity of 120 barrels each.

which of the new varieties are suitable for further propagation. At least one new variety raised in recent years is being planted up in wilt-affected areas, and it is hoped that much of such ground now idle will soon be producing useful quantities of hops. In connection with wilt, it has been shown that *Verticillium albo-atrum* can grow in unsterilised compost and spore formation may be profuse. This has led to the start of an investigation on the effect of tolerant varieties of hops on soil infectivity. In the case of infected gardens it is of interest that the survival of active fungus could be connected with the presence of the common weed, groundsel, which can act as a symptomless carrier of Verticillium.

Brewing science

An ever-increasing volume of work is now being done at the Brewing Industry Research Foundation, and the year has seen the publication of more of the results of the continued studies in barley and malt. One of the most important questions affecting malting is that of dormancy, since nowadays it is not customary to start the malting season with foreign barleys, and, with ever-increasing costs, it is economically important to start malting as early as possible in the season. The effect of sulphydryl compounds on newly harvested barley has been examined and found to be instrumental in promoting germination of such barleys. It has also been shown that water-sensitivity, which is the more persistent aspect of dormancy, disappears most rapidly in well-dried samples.

The problem of haze in beer has been studied from several angles, and this subject is of sufficient interest to have been the main topic at a Colloquium held in May under the auspices of the European Brewery Convention. Several aspects of the problem were discussed and it was decided to form a sub-group with the following terms of reference: (*a*) to provide material for study, (*b*) to devise more highly standardised methods of experiment and (*c*) to arrange collaborative working. This last is important, since it was felt in the past that individual problems of attack and the methods of working had been too varied to permit any valid comparison of results.

With the decline in the consumption of draught beer and the increase in bottled and canned beer, the question of chill haze has become more important, especially in the case of canned beer for export. It has been observed on occasion that a beer in can has not the same shelf life as the same beer in bottle, and it may be that the essential difference lies in the air content, a subject which is receiving much attention, particularly in America. Ascorbic acid has been in use there and on the Continent for some years, and there is no doubt that it is effective in minimising the effect of oxygen in the head space of a bottle, provided that the beer, through the various stages of the process, has had very little chance to pick up oxygen. This last point is of importance, since it has been shown that colloidal changes take place more quickly in beer treated with ascorbic acid than in beer bottled with complete exclusion of air. Much work has been done in Europe on the chemical composition of chill haze, and the differences in composition found by various workers are probably due to the diversity of methods used both for producing the haze and its subsequent analysis. Since, however, the substance concerned appears to be of a protein nature associated with tannin-like compounds, all of which have their origins in the raw materials, much could be done in the selection of malt, etc., to produce a product less susceptible to chill haze and which would require a minimum of treatment to give an extended shelf life.

Hops continue to be a fruitful field for research. The introduction of new tools, such as counter-current distribution and gas-liquid partition chromatography, has added considerably to our knowledge of the composition of the hop resins and also their fate during the brewing process. Before 1952 it was considered that the alpha and beta soft resins of hops consisted of humulon and lupulon, but modern methods of analysis have shown that the alpha soft resin consists of three components—humulone, co-humulone and adhumulone—and the beta soft resin consists of at least lupulone and colupulone. Although the three alpha components are virtually indistinguishable, counter-current distribution has shown that the proportion of the three substances in the alpha soft resin of a hop depends on the variety,

and, according to the season, and English Fuggle may contain 10 to 25% cohumulone, whereas a Bullion or Brewer's Gold would give 30 to 45%. Hops can be divided into groups according to their cohumulone content, and it has been suggested that some type of genetical control is involved in determining the composition of the alpha and beta resins.

In addition to the raw materials and the finished product, research has been going on in the glass industry to improve the strength and appearance of the bottles used by the brewing industry. Since the strength of a bottle depends on the condition of its surface, the glass technologists have been concentrating on methods of surface treatment which would minimise the development of surface abrasions through normal handling. The introduction of new silicones, which were established as non-toxic, provided an ideal coating which did not require removing before the bottles were used, and such have been the advances in methods of application that it is possible to have the bottles coated inside and outside or either, according to requirements. In a series of tests it has been found that the silicone film, in addition to reducing the amount of abrasion suffered on washing and filling lines, helps in the smooth running and eliminates the tendency to jam at unscrambler necks.

Microbiology

From the number of papers appearing on this subject it is evident that interest in the biological side of brewing continues to increase. This was clearly shown by the attendance at a Symposium on Recent Studies in Yeast and their Significance in Industry, held in Dublin in September, when over a hundred chemists and biologists, including some from European countries, heard an interesting series of papers covering many aspects of yeast growth and fermentation. Studies have continued on the effect of antibiotics on Gram-positive organisms contaminating brewers' yeast. A number of these substances have been tested against *Lactobacillus pastorianus*, but only penicillin and neomycin were found to be of practical value and, at the concentrations used, did not affect fermentation. Infection of pitching yeast due to *Flavobacterium proteus* can be controlled by polymyxin B, but *Acetobacter* and certain other Gram-negative rods are highly resistant to this antibiotic. However, it would be well to bear in mind the possibility of building up resistant strains if small doses of antibiotics are regularly used as a means of freeing pitching yeast from unwanted bacteria. It is of interest to note that it has been reported that various yeasts can produce an antibiotic substance when grown in a media containing a carbohydrate which they can ferment. The substance showed a bacteriostatic effect on various Gram-positive and Gram-negative bacteria, and this may account for the fact that, given a vigorous healthy fermentation, the bacterial content of a pitching yeast remains remarkably constant. An antibiotic which is proving very useful to the brewing microbiologist is actidione, which can be used to suppress the growth of brewing yeast and thus enable a count to be made on plates of the number of contaminating bacteria. One of the problems facing the brewing laboratory has been the counting of very small numbers of organisms in large volumes of liquid.

The testing for sterility of filtered beer can be taken as an example, for the count might be so low that a litre might only contain one organism. It would only be by chance, if on plating out one or even ten mil, a single colony was obtained. The problem has been successfully solved by the introduction of the membrane filter in the brewing laboratory, which allows the concentration on a small surface of the organisms in a large volume of liquid. They can then be stained and enumerated or, by placing the membrane on a nutrient surface when the nutrients diffuse through the membrane, grown to colony size for counting or further culturing. The method may also be used for the testing of air in fermenting rooms, etc.

The possibility of the water supply in a brewery being a source of spoilage organisms, has been pointed out in a paper describing a study made of the organisms isolated from water systems affected with slime. The presence of traces of alcohol in the air is conducive to slime formation, and frequently these deposits may be the cause of irregular results obtained on plating out samples from hoses or freshly rinsed bottles.

Analysis

A considerable amount of work continues to be done on methods of analysis and especially on the adaptation of newer techniques to the evaluation of brewing materials. Hop resin analysis has always presented certain difficulties unless suitable precautions are taken appropriate to the method employed and the age of the hop concerned. Although the classical methods under these conditions give concordant results, lead-precipitation methods are relatively lengthy and with some hops, especially old hops, are unreliable. Interest has recently been taken in polarimetric methods where interfering coloured substances have previously been removed by chromatography, and it has been found that the silica-gel used as a chromatographic agent may be replaced by active carbon. However, this method only gives total humulones, and a very elegant method employing separation by gas-liquid partition chromatography has been described which gives the components of the mixture. Ion-exchange resins have been used in fractionating the nitrogen compounds in brewers' wort, and examination of the various fractions obtained has revealed a number of compounds as yet unidentified as well as numerous identifiable amino acids, etc.

Carbohydrates have also been studied and details have been given of a modification of the anthrone colorimetric method suitable for the study of carbohydrates in malting and brewing. The estimation of small amounts of arsenic, particularly in coal, has aroused much interest in recent years, and the tendency has been to adopt a colorimetric method rather

than the Gutzeit stain. The disadvantage of such methods is that for accurate work a colorimeter is required, and this is not always available in smaller laboratories. A modification of the Case method has recently been published which, while retaining the original apparatus, has, by simplifying operations, greatly reduced the time necessary to make a determination without loss of accuracy.

General trends

Due no doubt to economic necessity, the number of breweries disappearing through amalgamation continues to grow, and it may be that future generations will only have about half a dozen beers from which to choose.

The trend towards mechanisation continues, and it is interesting to note that, when a malting is rebuilt, the bias is in favour of pneumatic drum malting. Mechanical floor turners are being installed in existing floor maltings, and new silos are being fitted with forced draught ventilating systems. They are also provided with air-tight doors which enable them to be used for malt storage as well.

The decline in the demand for draught beer continues and a portion of this trade is being replaced by filtered beer under pressure, in metal kegs. The trade in canned beer has now extended to the home market, and the flat-top can is generally adopted, although filling can be more wasteful due to spillage. However, there is no doubt about its usefulness as a pack, and it is not too much to hope that brewing science will furnish the information which will enable the brewer to produce a canned beer which will look and taste as good after six months as it did when newly packed.

FOOD MANUFACTURE
ANNUAL REVIEW

Ice Cream

By Eric L. E. Humphriss, A.R.I.C., M.I.Biol.

Emulsifiers and colours ★ Analytical problems ★ Flavours ★ Plant cleaning ★ Silicones ★ Packaging

ANY review of the ice cream industry of Great Britain must, by tradition, make passing reference to the weather. In so far as last summer is concerned, it is perhaps politic to leave it at just that!

Although there are no technical or technological developments of surpassing importance to record, research and development have not stagnated. Investigations have proceeded along by now almost predestined lines, with, perhaps, much of the interesting work remaining unpublished.

Legislation

No new legislation directly affecting ice cream has been introduced. Nevertheless, the Food Standards advisory committee's reports on colouring matters, and on the use of emulsifying and stabilising agents in foods, do concern the trade. The impending report on the tentative chemical standard for ice cream may well occasion the industry much more cogitation if the projected innovation and revisions materialise. The modified methylene blue test, together with the grading system based thereon, remains the "official" criterion by which the bacteriological quality of ice cream is assessed by public health authorities. How much longer this Gilbertian situation will persist, goodness only knows!

Writing at this season of the year, the absence of a trade show, exhibition or convention, commensurate with the magnitude of the industry, is keenly felt by those of us who can recall the national dairy and ice cream conventions held in London before the war.

Comparatively recent developments in synthetic non-ionic surface-active compounds have attracted the ice cream technologists and simultaneously the attention of the Food Standards advisory committee.[1] Their report devotes a paragraph to ice cream, advises statutory recognition of a permitted list of emulsifying and stabilising agents for general use in foods, and specifically exempts from any such permissive action most of the stabilisers commonly used in ice cream.

Emulsifiers

Among the substances approved are glyceryl monostearate under the omnibus heading "superglycerinated fats." The cellulose ethers and esters, lecithin, etc., are also considered harmless, but polyoxyethylene and pentaerythritol derivatives are tem-

porarily, at any rate, not recommended for approval pending the production of fuller biological data on their pharmacological action and metabolic fate on ingestion. This understandable caution may slow down experimental work directed towards ascertaining the value of these newer emulsifying agents in ice cream, and this just at a time when such concepts as the HLB values for these synthetics was tending to reduce the amount of pure trial and error associated with this sort of technical investigation. The problems involved in the manufacture and use of imitation cream are, in some respects at any rate, analogous to those of ice cream making—both need to be stable emulsions capable of aeration under conditions of severe mechanical agitation without "breaking." Research on both products may have to be replanned in the light of the above-mentioned report.

Colours

The proposed regulations for colouring matters in food, based on the supplementary report on colouring matters in food,[2] to be promulgated early in 1957 under sections 4 and 7 of the Food and Drugs Act 1955, do not seriously affect the ice cream trade. A permitted list of colouring materials is to receive statutory approval, and only such colouring agents will then be usable in ice cream. Paragraph 24, however, specifically exempts ice cream from the requirement to disclose the presence of added colour on the wrapper or label. As tinctorial preparations of vegetable origin are permitted, and as the permitted list of approved synthetic colours includes ten "yellows and oranges" and some fifteen "reds" of varying hues, no apprehension need be felt in the ice cream industry that the product is to be denied its colourful appeal. Manufacturers would be well advised to ensure that from now on colours they may purchase for use in ice cream are on the approved list.

Condensed milk to the rescue

Early this year considerable anxiety was occasioned by the threatened shortage of skim-milk powder, a position which, at the time of writing this review, has been completely reversed. The acquisition and distribution by the Association of British and Dominion Condensed Milk Manufacturers of the surplus stock of machine-skimmed sweetened milk then held by the Ministry of Food, Agriculture and Fisheries materially alleviated the position. The Association arranged for the small tins to be opened, the contents bulked, and made available in 56 lb. tins and 5 cwt. drums. This product proved to be quite suitable for use in ice cream and was, in fact, successfully employed as a mix ingredient by several ice cream manufacturers.

Analytical problems

The "disappearance" of sugar (sucrose) from samples of ice cream taken for formal chemical analysis continues to provoke interest. A paper on the subject was read at the annual convention of the Ice Cream Alliance at Porthcawl last September.[3] Since the initial case in Cardigan in 1953, this matter has attracted much more time and energy than it merits. Reference to any textbook on elementary bacteriology will reveal numerous species of micro-organisms capable of fermenting sucrose to "acid and gas"; hence it is to be expected that, unless samples of ice cream for chemical analysis are kept frozen until the analysis is commenced, microbial destruction of fermentable carbohydrates will ensue. Does this incident indicate the desirability of analysts being coached in the elementary principles of bacteriology, or sampling officers being provided with explicit instructions as to the treatment of samples whilst in their charge?

The British Standards Institute is shortly to publish a revision of B.S.684, Methods of Analysis of Oils and Fats, a publication all analysts concerned with, among many other things, ice cream, will wish to have at hand. Sundry other publications, *i.e.* B.S.2472, 1954, Methods for the Chemical Analysis of Ice Cream; B.S.2450, 1954, Annatto; and so on,[5] doubtless already repose on the analyst's and ice cream technologist's bookshelf.

Flavour

What should be the characteristic flavour of present-day ice cream? Protagonists who maintain that a dairy product cum vanilla flavour is still the goal to aim at are enthusiastic, if perhaps illogical, in their contention; whilst the proponents of the thesis that ice cream should now acquire a flavour nuance of its own, characteristic but not necessarily, essentially or overwhelmingly that of a dairy product, are equally energetic, if a little uncertain of just how best to achieve this end.

If the traditional dairy product flavour school prevails, then some support is lent to the claim, voiced from time to time by purists and "interested parties," that the description "ice cream" should be reserved for a product whose fat content is wholly milkfat. It follows that the use of so-called cream and butter flavours in present-day ice cream savours of sophistication. This, one would submit, is a quite untenable premise. As most readers will know from first-hand experience (if they be ice cream connoisseurs), more than one manufacturer has endeavoured to impart to his product a characteristic flavour. The upshot of this by no means hypothetical, if deliberate circumlocutory, argument is plain. Present-day ice cream must be more than a bland, neutral, almost flavourless background against which to exhibit a faint vanilla note. Indeed, very recently an ice cream sales executive, dealing with large retail stores up and down this country, told the writer that in his opinion the primary quality lacking in present-day ice cream was a characteristic attractive, intrinsic flavour.

It would appear that a resurgence of the counter-freezer method of retailing ice cream is at hand. At least one concern is producing with success, a special

counter-freezer mix, along the lines of the pre-war product.

Plant cleaning

Increasing attention is being devoted to the simplification and speeding-up of the daily chore of plant and equipment cleaning and sterilising, both here and in the U.S.A. Although much of this work is now being undertaken in milk processing plants, ice cream manufacture is virtually a parallel case, so that, with slight modification, the ideas and principles established for milk can be readily adapted for ice cream plant. This so-called "in-place-cleaning" ideally involves installing the plant in such a way as to facilitate the operations involved, *i.e.* falls on pipe runs, provision for detergent circulation, etc; nevertheless, ice cream making plant already *in situ* can easily be adapted to this end. Increasing use of the various quaternary bactericidal compounds available to the food industry raises similar considerations if these products are to be used with maximum efficiency and economy. For example, there is no reason why hundreds of gallons of a one in 500 or 1,000 quaternary solution used as a bactericide in a closed plant circuit should be run to waste daily. Indeed, the writer recently saw some data on the maintenance of quaternary concentration and bactericidal activity in a sterilising rinse re-used daily.

For the smaller ice cream maker, the combination of a non-ionic detergent with a quaternary bactericide or "sanitiser" in one liquid preparation probably offers advantages both practical and pecuniary. Several such proprietary preparations are now available and are proving both efficient and economical. The writer has obtained promising results from the use of two of the commercially available quaternary ammonium compounds employed as bacteriostatic cum bactericidal agents on and in plant overnight. The next logical development, which would undoubtedly appeal to the dairy and ice cream industries, is the marketing of a corrosion-inhibited quaternary which could then be freely used without invoking comment from the plant engineer.

Silicones

As is to be anticipated, silicones are beginning to be applied to the various facets of ice cream manufacture; so far the pioneering appears to be going on in the U.S.A. Projected uses range from silicone greases for conveyors, etc., exposed to low temperatures, *e.g.* in hardening rooms, to the treatment of heat transfer surfaces to facilitate subsequent cleaning thereof. Obviously the whole chemistry and technology of silicones are in their infancy, and we can anticipate further developments in the application of these novel compounds to the peculiar problems of ice cream manufacture.

Packaging

The Tetra Pak tetrahedral polythene lined paper carton originally developed in Sweden, and in use in this country as a single-service container for milk, is being experimentally tested in America as an ice cream carton. Further information on the progress of these trials, more especially in regard to consumer reaction to this uniquely shaped pack, will be awaited with interest.

The home-produced, cut-wrap-at-the-freezer plant is now regarded as the method of choice for the packaging of brickettes or wrapped sandwiches, and offers manifest advantages, both operational and hygienic, over the older methods. Ice-cream-on-a-stick appears to be gaining in popularity, and automatic plant capable of handling this novelty is now available.

Research into the best and most advantageous ways of using the cellulose derivatives as mix stabilising agents continues, with a successful conclusion almost in sight.

Ice cream and heart disease

Ice cream hit the medical headlines (and subsequently those of the daily press) in the form of a letter published in the *British Medical Journal*[5] over the signature of Dr. Kenneth I. E. Macleod. The writer of this letter hinted that the considerable consumption of ice cream by young American males might be causally associated with the apparently high incidence of early atheroma of the arteries of the heart, apparently found at autopsy on U.S.A. servicemen.

Animal fat, particularly milkfat, was, of course, the primary entity incriminated; more recently the specific phosphatide, phosphatidyl ethanolamine (cephalin), has been identified as the compound responsible for the initiation of the atheromatous patches on the blood vessel walls. While it could be maintained that present-day British ice cream (presumably American Mellorine also), made as they are from vegetable oils from which the phosphatides have been removed by refining, are on this account exonerated, it is always a pity when serious matters of this sort are widely reported out of context.

Incidentally, since vegetable lecithins prepared from groundnut oil, soya bean oil, etc., are generally considered to be mixtures of several phosphatides, among them the one mentioned above, the unqualified approval of vegetable lecithin in the report previously referred to may come in for reconsideration if the conclusions mentioned are confirmed.

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[2] Supplementary report, Colouring Matter in Foods. H.M.S.O., 1955. 9d.

[3] D. C. Jenkins. *Ice Cream Ind.*, **38**, No. 5, p. 312, Nov., 1956; *see also* FOOD MANUFACTURE, 1956, 31 (3). 89.

[4] Recommendations for the use of detergents in the Dairy Industry. B.S.2756, 1956.

[5] K. I. E. Macleod. *British Med. Journal*, No. 4991, September 1, 1956, p. 551. Sex factor in Coronary Heart Disease.

FOOD MANUFACTURE
ANNUAL REVIEW

Confectionery

By D. R. Felstead, F.R.I.C. *

Packaging ★ Costs and Prices ★ Additives ★ Colours ★ Biological testing ★ Chinese albumen

IN GENERAL 1956 saw a continuation and extension of the trends of the years immediately following the war. There was an extension of the bulk delivery of sugar, fats and flour, with the considerable economic and technical advantages they bring. Bulk handling has now extended to the delivery of a finished product—chocolate couverture—with a few manufacturers now delivering in bulk to their customers. In the retail field, the demand for prepacked goods continues to increase, and will be encouraged by the establishment of the many "self-service stores."

Packaging machines and materials

Mechanisation continues apace. It is perhaps best exemplified by the enormous increase in the productivity of packaging machinery. For instance, just after the war, toffee wrapping machines were operating at approximately 450 units per min. Today this rate has been doubled. It is to be hoped that the industry is alive to the future needs for the education and training of staff capable of keeping abreast with these developments. Mr. Lund Yates, when reading a paper entitled "Money, Machines and Men" at the Rome meeting of the International Association in April, did great service in dealing with these aspects of the industry's development.

More and more packages employ cellophane, laminated paper, polythene and other synthetic materials. While polythene may not yet have the attractive appearance of the older films, it is finding increasing use in bulk packing on account of its superior heat sealing and moisture proofing qualities.

While over the last three years the consumption of sugar confectionery and chocolate per head of the population has remained stable at 8-8½ oz. per head per week, the country's total expenditure on food and general consumer goods has risen, so that confectionery has not maintained its percentage of total food sales. Nevertheless, during 1956 there was a small increase in the total output of confectionery, with chocolate gaining over sugar confectionery.

* Chief Chemist and Technologist, Barratt and Co., Ltd.

Raw materials

Raw material prices generally were steady during the earlier part of the year, with the notable exception of almonds. But the recent increase in the price of sugar, coupled with the situation in the Middle East, has caused much uncertainty, and it is difficult to see how the cheapest confectionery can continue to be sold for 6d. a ¼ lb.

After the wide fluctuations in the price of cocoa beans of the last two years (in 1955, for example, they dropped from about £380 to £250 per ton), it is gratifying to be able to report a more stable situation in 1956. At the beginning of the year the price was about £235 per ton, and this gradually declined to the current figure of about £200. The drop in the price of cocoa has affected the price of cocoa butter, which is now about 4s. 6d. per lb. Thus the fears expressed in last year's survey that fluctuations in price during 1955 might reduce the consumption of chocolate have not materialised. The sustained lower price of cocoa beans has also reversed the tendency towards the use of substitute fats in chocolate manufacture, and is also responsible for the reduced demand for cocoa powder.

While cocoa prices have settled down during the last few months, serious concern has been shown in the confectionery industry at the recent increase of 4s. 4d. per cwt. in the price of sugar, which brings the basic price to 70s. 6d. per cwt. The Ministry of Agriculture, Fisheries and Food state that the increase was necessary to cover the cost of supplies during the current financial year. In part, the increase in price originates in rising freight rates—for example, the rate for transport from the West Indies to the United Kingdom increased from 117s. per ton in February to 135s. per ton in November.

The influence on price of the new arrangements for the marketing of sugar, which come into operation on January 1, is anxiously awaited.

Food colours

On June 25 the Minister of Agriculture, Fisheries

and Food announced in the House of Commons that the Government had accepted the recommendations of the Preservatives Sub-Committee for a short "permitted" list of colours for use in food.

While it must be conceded that such a list is the best way of ensuring that no suspect colours are used in foodstuffs, the practical manufacturing confectioners, particularly those with large and various export markets, can only view with dismay the publication in one country after another of lists of permitted colours so diverse in their contents. Already many difficulties have arisen. For example, the new British permitted list of colours does not include a satisfactory blue colour that is also permitted in the U.S.A. and Canada; the revised list recently published by the authorities in New Zealand prohibits the use of the pink colours Erythrosine and Rhodamine, both of which are permitted in Great Britain. Thus many confections made for home consumption are quite unsuitable for export, and if export markets are to be kept special batches must be made, necessitating extra control with separate manufacturing and storage space, all of which raises costs.

It is refreshing to find amid this tangle of conflicting regulations a country which officially recognises the need for flexibility in the matter, while at the same time contriving to safeguard the consumer. This is Denmark. In repealing the 1913 regulations the Danish Ministry of the Interior has published a letter giving guidance to all recognised authorities. They consider that the time is not opportune for the issue of an order for the following reasons. Firstly, the regulations of the various countries of the world vary considerably, and as foods manufactured in Denmark for export are often consumed in Denmark, there would be great difficulties in enforcing regulations embodying an exhaustive list of colouring matters. Secondly, as the World Health Organisation and the Food and Agriculture Organisation are at present engaged in international discussions with regard to colouring matters in Food, in the opinion of the Danish Health Service the publication of a permitted list of colours at this time would be premature. Thirdly, they point out that very few colours have been submitted to toxicological examination, and suggest that fairly frequent modifications in expert opinion may be witnessed in the next few years.

In the meantime, the Danish National Health Service has published a comprehensive schedule of food colours which may be used without the risk of prosecution under Danish Law, and does not prohibit the use of other colours, but suggests that manufacturers should seek advice from the National Health Service before marketing foods containing such colours. In this way, the Danish Authorities are keeping abreast of modern opinion and development in this field while retaining safeguards for the consumer and presenting no deterrent to exporters.

The present confused situation cries for a rational international approach to the whole chaotic subject. It is essential to get uniformity in international ideas and action on food colours. The obvious first step is to get agreement on criteria of suitability and biological test methods.

Biological testing station

Food manufacturers in general, and not least confectionery manufacturers, must naturally give close consideration to the new and ever-increasing range of materials for improving texture, keeping qualities, colour, appearance, flavour, etc. Manufacturers must not only reassure themselves of the effectiveness of such compounds but also of their harmlessness. Under the recent Food and Drugs Act, they have the main responsibility for ensuring that their products are harmless. This responsibility, coupled with the scarcity of reliable biological evidence concerning many such compounds, serves further to emphasise the great need for an organisation for biological testing of food additives. The possibility of inaugurating such a testing station is already being examined. The confectionery industry is to be congratulated on its foresight in giving this venture its practical support.

Emulsifiers and stabilisers

In 1951 the Food Standards Committee of the Ministry of Agriculture, Fisheries and Food appointed a preservatives sub-committee to review the Public Health Regulations and make recommendations for their amendment. The sub-committee

Bulk delivery. A 10-ton tanker discharging chocolate couverture at a customer's premises. The consistency of the couverture is controlled during transport.

has already reported on antioxidants and colouring matters, and during 1956 its report on emulsifying and stabilising agents was endorsed by the Food Standards Committee. As in the case of colours, the sub-committee suggests control by a permitted list. In compiling this list the sub-committee has excluded such substances as those of natural origin, many of which are the natural constituents of certain foods, *e.g.* pectin and gelatine, on the grounds that there is no need to regulate their use. The proposed permitted list appears to include all emulsifiers and stabilisers at present used in the confectionery industry, with the possible exception of the group of substances known as the *Tweens*. The sub-committee's only comment on the quantitative aspects of the subject was that the substances should always be used in the smallest quantities consistent with the best commercial practice. The sub-committee is willing to consider promptly new substances for addition to the permitted list.

Egg albumen

During the year there was concern for the continued supply of dried egg albumen from China. Just over a year ago, medical officers of health and sanitary inspectors, in the course of their routine checks, found parcels of Chinese albumen, principally of the crystal variety, which were infected with salmonellæ, including paratyphi B species. This gave rise to suspicion that the albumen might be the cause of paratyphoid infection in this country. The authorities therefore took steps to control the distribution of Chinese egg albumen. Although there has never been any evidence that the use of egg albumen in confectionery products was a health hazard, the confectionery industry, in common with others, was faced with the possibility of restricted supplies. An Albumen Advisory Committee was set up which, with scientific and commercial sub-committees, investigated the position. With the co-operation of the Baking and Food Manufacturing Research Associations a method of prolonged heat treatment was evolved which proved successful in killing salmonella infection without impairing the beating properties or solubility of the albumen. Several importers are now employing this technique on a commercial scale, and it is hoped that adequate supplies will now be maintained. In the long run, however, the responsibility for supplying "clean" albumen must rest with the Chinese suppliers. A Chinese bacteriologist recently visited Britain to survey the current situation, but until supplies of "salmonella-free" egg albumen from China are assured the Health Authorities are likely to insist on heat treatment and subsequent sampling for testing.

The International Sugar Confectionery Manufacturers' Association

An outstanding event of the year for the Sugar Confectionery Industry was the meeting in Rome in April of the International Sugar Confectionery Manufacturers' Association. The meetings were well attended, about one hundred delegates from eight countries being present. The proceedings were opened by the Italian Under-Secretary for Industry and Commerce, followed by the election of the new President, Col. A. B. Walters, in succession to the Foundation President, M. Jean Herbet. Fourteen papers covering a variety of subjects, including raw materials, machinery, automation, scientific progress, technical education and economic matters, were presented and stimulated lively and productive discussion in which members of the British delegation took a leading part. Summaries of the papers presented and details of the resolutions passed were given in the June issue of FOOD MANUFACTURE.

Pork and Pork Products

HERE is a book* which will prove of greatest value to the student who requires a general knowledge of the meat manufacturing trade, but who has not the practical experience to benefit from a more comprehensive work.

In 140 pages the author covers nearly every line normally manufactured by the larger meat product factories, including pies, fresh and cooked sausages, pressed meats and bacon curing. He also touches on slaughtering, and devotes considerable space to elementary costing.

In every case the author gives sufficient information for the intelligent student with a background of retail shop butchery to produce the article he is describing; but this hardly justifies the claim made on the fly-leaf that this is a guide for "the large scale producer." Nowhere is mention made of recent advances in production machinery, by-product utilisation, or ways of improving shelf life by such methods as quick freezing or vacuum wrapping. The reader has not, in fact, been given sufficient information to produce more than a successful experimental batch; everyday production on a large scale is another problem entirely.

In spite of these shortcomings, the book has considerable merit in that the student is given, in each case, a reliable basic formula which he can modify to suit the conditions, and meats available in his own factory. There are a large number of very clear illustrations and charts which are particularly helpful should the student wish to embark on a type of product entirely new to him.

The book can, then, be thoroughly recommended to all who wish to gain a working knowledge of pork products, providing they keep in mind that the hazards of full-scale production, and the need to balance the various parts of the carcass, are problems still requiring investigation.

A. M. ANDERSON.

* *Pork and Pork Products.* By John Fisher. 1956. Practical Press. Pp. 142 incl. index. 21s. net.

Left. **Experimental freeze drying unit.** *Right.* **Large extraction and solvent recovery unit for research on carotenoid pigments.**

A New Department of Food Science in Glasgow

In 1906, at the request of the Scottish Association of Master Bakers, the Governors of the Royal Technical College* founded the Scottish School of Bakery. For fifty years this school has provided courses of training for the baking industry, and its former students are to be found in all parts of the world. The work of the school has now been widened to include all branches of the food industry in a newly-formed Department of Food Science.

THE ACTION of the Governors of the Royal College of Science and Technology in enlarging the scope of the original department resulted from the experiences of the Second World War, when the technological needs of the food industry were clearly shown by the exacting responsibilities with which it was faced. During and after the war the demand for food scientists and technologists rose sharply, and many manufacturers had great difficulty in obtaining suitable staff.

In 1947, Prof. James P. Todd began exploratory talks with the interested groups on the possibility of developing food science courses to meet the needs of the industry for highly trained scientific personnel. As a result of these talks, a four-year associateship course in this subject, equivalent in scientific content to a university honours degree, was established shortly afterwards. Post-graduate courses have also been instituted to meet the needs of the pure science graduate seeking a career in the food industry, and the research work of the department has already led to the granting of higher degrees to several post-graduate workers on topics involving fundamental aspects of food science.

From the outset the highest possible scientific standards have been maintained, even although this has meant limitation of students in attendance, and the courses, while necessarily experimental in their original content, have been continually modified in the light of experience. Students for the associateship course of the college study fundamental chemistry, physics, mathematics, biochemistry, physiology and microbiology in the initial part of the course, the study of foodstuffs being introduced in the third year and studied full-time throughout the fourth year. Both the scientific aspects of the chemical composition of foods and the technology of food processing are dealt with, and students are given every assistance and encouragement to spend at least two of their long vacations working in food factories or food research laboratories in this country or abroad.

The selection of topics from such a wide field has been given much thought over a number of years. It is tempting to try to familiarise the student with every aspect of food processing, but in the time available this cannot be done and, in fact, would defeat its own object. The course has

* Now the Royal College of Science and Technology.

therefore been designed with the fact in mind that the student may subsequently enter the food or allied industries either in production, in the research laboratory, or in a managerial or administrative capacity. It is desirable, therefore, that courses, although specialised, should be broad enough to permit the student's subsequent development along the lines most suited to his personality and talents.

The food science courses were at first housed in the original lecture rooms and laboratories of the Scottish School of Bakery, but expanding needs soon showed this accommodation to be inadequate. The Governors of the College therefore acquired the old mansion house at 1, Horselethill Road, Glasgow, W.2, and have adapted and equipped the building for lecture and laboratory work.

The laboratories provide facilities both for teaching and research, and small-scale food processing equipment has also been installed. In addition, a lecture room, a students' common-room, a library and staff accommodation have been provided, and a research programme which includes studies on wheat flour proteins, fat oxidation and the contamination of foods with radioactive materials is rapidly gaining momentum. Set in pleasant surroundings, these new laboratories augur well for the future of this venture.

Already requests are being received at regular intervals from firms who wish to employ former students, but the demand is greater than the supply, and too often it is not possible to provide the assistance needed. The system of sponsored studentships practised in other industries would do much to secure and furnish the scientific skill needed.

There is a special need for assistance from manufacturers to encourage science graduates to undertake a year of post-graduate study in food science, and manufacturers interested in this method of obtaining specially qualified staff are invited to communicate with the Head of the Department.

J. HAWTHORN.

Inherent Vice and Whiskery Meat

THIS book* is primarily intended for those directly concerned with the estimation of loss and damage to seaborne commodities. But it contains much that is also of interest to all users of imported raw materials, and to all concerned with spoilage problems.

The present volume is an enlarged and revised edition of the 1952 handbook, and has doubled in bulk. It opens with a 23 pp. summary of the general principles to be observed in surveys of damaged goods. Terms in common use are defined; various types of damage are reviewed; and the kinds of loss that are not covered by the ordinary marine insurance are specified.

Part II deals with the causes of damage. It comprises sections on Condensation and Sweat, Infestation, Mould, Inherent Vice, and Rust. Two kinds of condensation are distinguished: (*a*) ship's sweat, which is moisture—usually from the cargo—condensed on the ship's structure, and (*b*) cargo sweat, which is due to moisture from warm air condensing on a cool cargo. A practical point arising in connection with this second form of condensation is that a cold cargo should not be ventilated until it has warmed up.

The causes of infestation by insects and mites, and the factors leading to damage by mould fungi, are briefly but adequately summarised. An attempt is even made to explain that mysterious term "inherent vice"; though as might be expected of a term so popular in legal disputes, exact definition is impossible. It does not mean original sin!

Part III forms the largest part of the handbook, covering 150 pp. It consists of notes on commodities (arranged alphabetically) in relation to the loss and damage they may undergo during sea transport. All kinds of commodities are listed, but, as one would expect, at least half the entries relate to foodstuffs of some sort. Under the letter C, for example, one finds canned goods, casein, cereals, cheese, chocolate, cocoa beans, coconut, coffee, and confectionery. Non-foodstuffs range from textiles to plastics, and from galvanised iron sheets to horse hair.

Treatment of the separate commodities is necessarily somewhat scrappy, and occasionally it is a trifle naïve, as in the following extract:

"White wool presscloth which has been damaged by salt-water will be found to be stained, mildewed, rotten, crumbly, and emitting a bad odour. Damaged presscloth of this nature should, if possible, be used without delay."

Nevertheless, this section contains a mass of interesting and valuable information, on subjects as varied as spontaneous combustion, "hidey" odour in coffee, mildew in motor vehicles, and "whiskers" on frozen meat.

An Appendix to the handbook includes a very complete list of foreign weights and measures with their English equivalents.

L. D. GALLOWAY.

* *Lloyd's Survey Handbook*. 1956. Published by the Corporation of Lloyd's. Pp. 229. 69s. net.

▸ Air filters for industrial dust removal are described in the Visco Engineering Co.'s latest handbook. Besides dealing with standard oil-wetted type filters, the book describes self-cleaning, "dry" and pressure filters.

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▸ To commemorate their 50th anniversary in the wrapping machine business SIG have published a colourful booklet showing the different packages produced by their machines. The actual packs are illustrated in colour and the automatic packaging machines in monochrome.

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▸ The *Smokehouse Trouble Shooter*, has been published by the American Meat Institute Foundation, to help producers of smoked meats. It is divided into two sections, the first emphasising the correct methods of cleaning the smokehouse and the second describing adjustments and repairs.

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▸ Full details of a new system claimed to greatly increase the scope of overhead conveying in factories large and small are given in a booklet recently published by Geo. W. King Ltd. Other leaflets describe the company's patent conveyor chain, *Mansaver* grab, *Mammoth* electric chain pulley block, and rubber-tyred tractor unit.

Advances in Food Technology

SUGAR CONFECTIONERY

Aeration

Air plays a considerable part in the making of sugar confectionery. Air bubbles are introduced into the mass by means of beaters. The volume obtainable through whipping a solution which contains, apart from the whipping agent, sugar in the form of saccharose, glucose syrup or invert sugar, is mainly dependent on the viscosity of the solution, the design of the beater, and the whipping agent used. For this purpose, egg albumen is generally used. New whipping agents produced on an industrial scale are gaining in importance. When producing confectionery containing more than about 25% water, the whipping is carried out with a solution which already contains all or nearly all raw materials of the finished product. Where the finished product contains less than 25% water, a special admixture is prepared which is later added to the bulk of the raw materials, generally in the form of a hot sugar solution.—J. W. Mansvelt, *Fette, Seifen, Anstrichmittel*, 1956, **58**, 907.

ORANGE JUICE

Bacteriological Flora of Frozen Juice

To learn more about the prevalance of certain types of coliforms and related organisms in frozen and chilled orange juice, workers at Kraft Foods laboratories decided to determine the identity of some of the Gram-negative rods isolated from samples of orange juice by use of Violet Red Bile agar, a selective medium for coliforms. Cultural characteristics of 150 bacteria isolates were studied. When the isolates were grouped, 65% were of the Aerobacter type and 35% of the intermediate type. No cultures of the *Escherichia coli* type were isolated in this investigation.

Of the 17 Gram-negative rods isolated from one sample of orange juice, 5 cultures were identified as *Aerobacter aerogenes*, 4 as *Escherichia freundii*, 2 as *Escherichia intermedium* and one as *Serratia marcescens*. The ability of the remaining 5 cultures to produce soft rot in carrot tissue indicated that these cultures closely resembled the genus *Erwinia*.—M. Purko, R. V. Hussong and C. W. Kaufman, *Food Research*, 1956, **21**, 5, 583.

MARGARINE

Packing Foils and Keeping Quality

The German Research Institute for the Preservation of Foodstuffs, Karlsruhe, has carried out research on the keeping quality of two typical commercial brands of margarine as a function of storage temperature and of the packing materials used. The tests were carried out with four different types of samples, viz. (1) *Rama* margarine with *Rama* foil consisting of aluminium foil backed with parchment paper on the inside and with p.v.c. film on the outside; (2) *Rama* margarine with *Sanella* foil, consisting of aluminium foil backed with parchment paper only; (3) *Rama* margarine merely wrapped in parchment paper, and (4) *Sanella* margarine in *Sanella* foil. The quality of the wrapping, in terms of moisture loss (*i.e.* loss in weight), yellow colouring and peroxide contents was highest with *Rama* foil, followed by *Sanella* foil and parchment paper in that order. Both brands of margarine can be kept at room temperature for 3 to 4 weeks before there is a noticeable deterioration in flavour. If the margarine is to be kept fresh for more than six weeks, cold storage must be resorted to.—H. Schmidt, *Fette, Seifen, Anstrichmittel*, 1956, **58**, 821.

YEAST

Research with Paper Chromatography

Research has been carried out at the Prague Chemical and Technological High School in order to elaborate an easy chromatographic method applicable to distilleries and yeast factories, to observe the fermentation of different sugars, to observe the rates of fermentation of individual strains of yeast with a view to their practical application in industry, to follow the course of fermentation of raffinose, and to determine the nature of the remaining sugars in the alcoholic fermentation of molasses.

The apparatus and reagents used were Whatman filter paper No. 1, a developing agent consisting of n-butyl alcohol, acetic acid and water, and a solution of benzidine in concentrated acetic acid, followed by a solution of aniline oxalate as detecting agent.

The results of the experiments on the fermentation of raffinose showed that the latter was fermented by yeast to the extent of one-third only. The chromatographic records clearly show that the fermentation of the raffinose mainly takes place at the end of the process when most of the other sugars have already been utilised. It was also found that the yeast strain isolated from cane sugar molasses fermented fructose faster than glucose, whilst those isolated from beet sugar molasses fermented glucose faster than fructose. It is thus possible to influence the rate of fermentation by a suitable choice of strains. A chromatographic fermentation control system was established at a Czech distillery in 1954.

Chromatography has proved very useful as a means of controlling fermentation and allowing the regulation of the rate of feed.—J. Dyr and V. Krumphanzl, *Industries Alimentaires et Agricoles*, 1956, **73**, 441.

Pasteurisation of Pre-packed Meat by Gamma Rays

INCREASING attention is being paid by the meat trade, particularly in the United States, to the possibility of wholesaling fresh meat in prepared, pre-packed standard cuts which have been made up in retail-size portions at the wholesalers rather than at the retail counter. One of the main obstacles to the wide adoption of this procedure is the fact that cut meat cannot be kept, even under refrigeration, for anything like the time for which the uncut carcass can be kept.

To overcome this difficulty, three American scientists working under a United States Atomic Energy Commission assignment at the University of Michigan, have suggested the pasteurisation of fresh meat by gamma irradiation. A report of the work of these three men (L. E. Brownell, J. V. Nehemias and J. J. Bulmer) has recently been made available in this country through the Technical Information and Documents Unit of the D.S.I.R.

Experiments to determine the effectiveness of irradiation were undertaken by using raw minced lean beef which had been inoculated with a psychrophilic organism isolated from raw meat. After inoculation, the meat, which had an initial count of 5×10^5 micro-organisms per gram, was divided into six portions of which two were retained as control samples while the remaining four portions were given respective irradiation dosages of 20,000, 40,000, 80,000 and 160,000 rep. After irradiation the meat was stored in a refrigerator at 4°C. and the growth of micro-organisms measured over a period of 13 days of storage.

These counts showed that, although there was no "lag" in the growth of the organism in the control samples, this "lag" was shown in the case of the irradiated portions and, indeed, increased in these portions as the dosage increased. Thus the "lag" was ½ day for the sample receiving 20,000 rep, 1½ days for the sample receiving 40,000 rep, 3½ days for the sample receiving 80,000 rep and 5 days for the sample receiving 160,000 rep.

Taste-panel tests were also undertaken on samples of gamma-ray-pasteurised fresh meat, and these revealed a definite increase in refrigerator shelf-life as a result of radiation pasteurisation. While admitting that more experimental work along these lines still requires to be done, the authors of the report are nevertheless convinced that their basic contention has been proved.

They therefore proceed to describe a proposed method of operation at the pre-packaging centre. Normal slaughtering procedures are followed up to the chilling stage, which is included because it makes cutting easier and discourages the growth of micro-organisms during cutting.

Cutting can be envisaged as a mass-handling operation, with each cutter performing a specialised function such as the cutting of steaks, chops, roasts, etc., all of various retail sizes. The portions of meat are next conveyed to packing machines which wrap them in suitable covering materials or place them in cartons.

Packaging and processing

Several possible packaging materials are mentioned in the report, including plastic films like polyethylene, *Saran* and *pliofilm*, paper, cellophane and aluminium foil, each of which has its good and weak points. The authors suggest that a laminated material could be used so as to take advantage of the good qualities of more than one component. Thus, a laminated material with an outer layer of heavy kraft paper, a centre layer of thin aluminium foil and an inner layer of this polyethylene would combine the strength and economy of the paper, the barrier effectiveness of aluminium foil and the heat-sealing properties of the polyethylene.

Immediately following this mechanical packing, each individual portion would then be weighed and the weight stamped on the package by machine. It would then be necessary to pack the wrapped portions into suitable cartons for transportation. Kraft paperboard, already widely used for other packaged food products, is recommended here.

At this stage, the packaged meat in cartons would be pasteurised by gamma irradiation in a suitable radiation chamber set up at a packing station. As the operation would have to be conceived on a mass scale for economic reasons, it would be necessary to use a conveyor to pass the cartons of meat into the radiation chamber, through the field of radiation and out again. For high efficiency in the utilisation of the radiation, care would have to be taken to ensure a sufficient total thickness of meat in the cartons to absorb most of the radiation.

Operating costs

On the basis of their experiments, the authors of the report contend that the best results would be obtained if the thickness of the pre-packaged meat is about 8 in. They describe a radiation chamber in which meat of this thickness requires four journeys by conveyor through the radiation source at increasing distances from it. The technical problems posed by such an operation would appear to be considerable, but are capable of solution. Indeed, the authors are prepared to submit an estimate of the cost of the "radiation facility," which they place at $82,500 (about £29,500). Operating costs (using Cesium-137 as the radiation source) are estimated to amount to $154,200 a year (about £55,000).

Nevertheless, the authors stress that their proposal is still only in the experimental stage and that a number of problems remain to be solved before it will be possible to pasteurise pre-packaged meat with gamma radiation on a commercial basis. They feel, in particular, that more work must be

done on the question of establishing the wholesomeness of irradiated food although a pilot animal-feeding project, spread out over a year, has as yet revealed no reason why irradiated food should not be considered wholesome. Important investigations on this point are continuing.

Many other problems still exist, such as the changes in colour which are specially noticeable on the surface of irradiated raw beef. More taste-panel studies are required on different types and cuts of meat, and further information is needed on the increase in shelf-life which can be expected by using different radiation dosages and varying storage conditions.

Meanwhile, experiments on these and related problems are continuing in the United States, and further reports of these activities will be awaited with considerable interest.

ERIC FORD.

Heavy Metals in Hops

IT may seem unlikely that there should be any connection between brewing and the growth of seedling trees in Forestry Commission nurseries; but members of the Chemistry Department of Rothamsted Experimental Station have just shown that the amount of copper contained in hop-waste or spent hops — approaching 1,000 parts per million—produced an outstanding effect in averting a pathological withering of spruce needles (Miss B. Benzian and Dr. R. G. Warren, *Nature*, 1956, **178**, pp. 864-5). Their prolonged studies have cleared up a mystery which arose before the last war, on the allegation, by a "natural manure" enthusiast, that no "artificial" fertilisers gave as good growth of young conifers, on a sandy heath near Wareham in Dorset, as compost did.

In trials made by Rothamsted in collaboration with the Research Branch of the Forestry Commission it was found that only composts containing hop-waste prevented "tip-burn" of spruce needles. The trouble was finally diagnosed as deficiency of copper in the soil.

Vessels (called "coppers") in which the hops are boiled with wort in the brewery yielded up enough copper to make the spent hops effective as sources of copper for young spruce trees. Since beer contains only traces of copper, this suggests a remarkably selective action of the hops on copper in hopped wort: possibly brought about by base exchange.

Nickel in beer

That has cleared up one mystery; but another has emerged this year in respect of nickel in fresh hops. Nickel in barley, hops, and beer has attracted a good deal of analytical attention lately. A study of nickel in brewery raw materials, and in beers, mostly of American and Canadian origin, was presented lately in *Wallerstein Laboratories Communications* of New York. No more than minute traces were found in most samples of beer, but a couple of Canadian beers contained heavy traces, which—the authors suggested—might have come from the modern alloys used in the brewing equipment. It was noted that, weight for weight, hops contained more nickel than other raw materials of U.S. origin. Though the authors did not make the suggestion, it is quite possible that much of the extra nickel in the beers was brought in by barleys grown on nickeliferous soils; the barley-growing districts of Ontario are not far from the areas where nickel ores are mined.

Some Aberdeenshire soils contain enough nickel to interfere with growth of oats. We must await analyses of Canadian barley before this suggestion about a source of excess nickel in beer can be supported or disproved. It cannot fail to have some importance for manufacturers of brewery and other food-plant equipment containing nickel. Incidentally, the Wallerstein Laboratories authors suggested that nickel might be even more potent than iron in causing the trouble known as "gushing" of bottled beer.

An investigation of heavy-metal content of hop plants in relation to the disease called "nettlehead" has been made by J. R. Hudson, of the Brewing Industry Research Foundation (*J. Inst. Brew.*, 1956, **62**, pp. 419-27). The disease has been ascribed to a virus, though no natural vector has been discovered. The results from one hop-garden which was sampled intensively showed that leaves and hop cones from plants suffering from nettlehead contained uniformly higher concentrations of copper, iron, and nickel than did corresponding tissues of healthy plants.

Supporting evidence that nickel is in some way connected with nettlehead was provided by eight other gardens sampled less intensively. In the first garden, the soil near diseased plants contained more nickel than did the soil bearing healthy plants.

Copper might be accounted for as residues from spraying; but what is the source of the excess nickel? The amounts of nickel found in leaves corresponded very fairly with the severity of visible signs of the disease. Outbreaks of the disease are frequently localised on, for instance, the sites of old hedgerows; but why hedges should accumulate nickel in the soil (if they do) is a question which baffles us. Do the hops become diseased with nettlehead because they are growing on soil containing too much nickel for healthy growth; or does the disease predispose the plants to take up more nickel than they would if they were healthy?

Mr. Hudson made no attempt to answer any such hen-or-egg puzzle. We suppose that, as a wise man, he is awaiting more evidence about a problem which is decidedly intriguing.—H. N.

Machinery and Equipment

CONFECTIONERY PUMPS

Development work involving the installation of considerable quantities of new plant and ancillary equipment, and the re-siting of existing machinery, has been carried out at the Stratford, London, works of Clarnico Ltd.

On the top storey of the new factory building fruit jellies are manufactured. The jelly is cooked in pans with no bottom outlet and transferred to storage vessels, whence it is passed to the hoppers of the depositing machines.

The danger of handling hot jelly, and the uneconomic labour usage, have been dispensed with by the installation of three Megator-type R8 stainless steel sliding shoe pumps, fitted with *Megathene "F"* shoes to withstand the great heat.

A sequence of three pumps is used to transfer the jelly from the cooking vessels to the hoppers of the depositing machines, and the installation has been so designed that any pump can perform its counterpart's normal sequence.

To prevent the jelly vaporising when lifted under suction at a high temperature, the pump was floor mounted and a pipe gradient created from the mixing vessels to the pump. This reduced the actual suction lift of the jelly as much as possible, minimised flashing, and the jelly flowed virtually by gravity to the pump.

On the fourth storey of the factory is a section manufacturing fondant. Special dissolving vessels mix sugar and glucose which are automatically metered in correct proportions as a continuous process, and the resulting syrup is then pumped to the reservoir tanks of any of the fondant machines. Here again the pumping installation is completely interchangeable. The temperature of the sugar syrup is higher than that of the jelly, although there is less danger of flashing, but the *Megathene "F"* type shoes fitted to the pumps are claimed to have been most successful.

A section of the second storey is devoted to chocolate work, and a Megator pump has been installed to feed chocolate from a storage vessel to a drip-feed unit previously serviced by hand. This pump is fitted with *Megathene "D"* type shoes to withstand certain elements within the chocolate, and with a contact heater within the base to maintain constant temperature conditions at all times.

The pumps can easily be cleaned by the removal of a single cover plate which exposes the entire pump without disturbing any pipework or fittings.

Jelly making machines at Clarnico Ltd., showing (*top left*) two "Megator" pumps.

POLLUTION CONTROL

A solution to the problem of air pollution by industrial fumes is said to have been found by Oxy-Catalyst Sales Ltd., a subsidiary of the Vokes Ltd. Group. The *Oxycat*—as the new product is called—is an invention of E. J. Houdry, the originator of the petroleum cat-cracking process, and has been in successful operation in the U.S.A. for a number of years. Its primary function is to eliminate the obnoxious nature of industrial effluents of all kinds but in many applications it can also have an important heat-recovery or fuel conservation function.

The *Oxycat* consists of two end plates, a tie-rod and a number of streamlined elements coated with a film of catalytic alumina and platinum alloy. This film, resistant to high temperatures and thermal shock, converts foul and waste material such as obnoxious gases and dangerous or annoying fumes into their oxides plus heat. Most objectionable gaseous effluents contain combustible elements and it is usually these materials that form the nuisance. They include the range of hydrocarbons classed as aromatics. Submicronic carbon particles come into the picture as black smoke and can be dealt with by the *Oxycat*.

To start the catalyst reaction, the gaseous stream entering the unit must be at a minimum temperature of 500°F. Once started, the reaction itself will increase the *Oxycat* temperature until a state of equilibrium is reached. The normal procedure is to fit a pre-heat burner ahead of the catalyst to assist in starting up. Various automatic means of controlling this burner can be adopted so that it only remains in operation as long as is strictly necessary.

HAND LIFT TRUCK

Stillages with an underclearance of more than 21 in. can be handled by a new model of the *Yale Blue Streak* hand lift truck. It has a capacity of 2,500 lb.

This truck is mechanical in operation. The platform is elevated by one downward stroke of the handle and locked in position by depressing a pedal. A second pedal is used to permit the load to be lowered—against the special Yale hydraulic load check which protects operator, truck and load from damage. The truck handle is balanced to relieve the operator of its weight. The truck can be supplied with different sizes of platform, and with wheels fitted with roller bearings instead of ball bearings, if required. Wheels are cast iron or rubber tyred according to the customer's preference.

Other models of this Yale truck range in size between 36 in. and 84 in. long, with platform widths of either 17½ in. or 26½ in. Platform heights vary between 6 in. and 11 in.

CLEANERS' TROLLEY

Powell and Co. have introduced a Cleaners' Trolley to their "Clean-Aid" range. It is made of tubular steel and is mounted on ball-bearing castors with large rubber-tyred wheels. Dimensions are 42 in. long × 38½ in. high × 21 in. wide.

The trolley easily carries such equipment as buckets, mops, brooms, detergent tins, vacuum cleaner or small polishing machine.

The top tray is made from expanded mesh material so is easily kept clean. It holds miscellanous supplies such as cleaning powders, dusters, dustpans, soaps, etc.

Four projecting rubber-covered supports not only hold long handled brooms in position but can be utilised if required for hanging hand brushes, feather dusters, etc.

The trolley is robustly constructed for commercial, institutional and industrial use and weighs 52 lb.

This cleaners' trolley is a new addition to Powell and Co.'s "Clean-Aid" range of equipment. It is made of tubular steel and mounted on ball-bearing castors with large, rubber-tyred wheels. Dimensions are 42-in. long, 38½-in. high and 21-in. wide. It weighs 52 lb.

INSULATING JACKET

A new form of aluminium covering has been developed by Corrosheath Ltd. in conjunction with Venesta Ltd.

This new jacketing is expected to have many varied uses, especially in enclosing steam, hot water, chemical and oil pipes. The jacketing is made of 0·006 in. gauge aluminium foil fabricated with ⅛ in. corrugations to provide extra strength. The alloy used is aluminium 2S hard tempered (B.S. 1470SK). Generally the jacketing has a glued-on asphaltic moisture barrier comprised of Kraft Union waterproof paper.

This barrier prevents any possibility of corrosion where the insulation material is alkaline. However, the jacketing is also supplied without the moisture barrier, for use where the problem of corrosion does not arise. The material is supplied in 24 in. wide rolls, 100 ft. long, and may be cut to size on the site.

This 2 ft. width can easily be fitted by one man who cuts the jacketing to the required size, wraps it round the insulated pipe, and secures it with an aluminium strap at each end of the strip. It can be cut with strong scissors, and in fixing the band sufficient tension can normally be obtained by hand. The strapping used is supplied in 5-lb. coils, and is ½ in. wide and ·020 in. thick.

When covering the full length of a pipe, each width of jacketing should overlap to provide complete protection. Bends in the pipework can be covered with 3 in. wide soft tempered strip aluminium which is applied like a bandage.

As the "bandaging" may not be entirely weatherproof, a layer of plastic or grease impregnated tape should be applied first.

THERMAL CONTROL SYSTEM

Some time ago the American Meat Institute Foundation developed a thermal sensing unit capable of providing an accurate and continuous record of *product* temperatures in dry-melter operations. This unit, it was pointed out, would permit an operator of a renderer to observe the precise progress of cook, to determine end-point, and to control product quality.

Developmental work has continued. Foundation engineers have experimented with various types of installations and now have evolved an easy, practical installation that can be used in virtually any plant. The complete assembly, as well as effective recording instruments, now can be purchased through Minneapolis-Honeywell Regulator Co. under a licensing arrangement approved by the Foundation's Development Committee.

The new thermal control system for dry melters has been thoroughly tested and proved in edible rendering operations under commercial operating conditions. Similar tests in connection with commercial inedible rendering now are in progress. All tests to date show positive results comparable with those conducted in connection with commercial lard rendering and are expected, on completion, to provide evidence of completely effective control over rendering and over product quality for inedible as well as edible dry-rendering systems.

PIPE PROTECTION

A pipe protection tape, claimed to have inherent self-adhesive properties and therefore without the disadvantages of an adhesive coating, such as lack of keying, breakdown of the adhesive under certain conditions and poorer aging qualities, has been marketed by John Gosheron and Co., Ltd.

This tape, known as *Vylap*, is said to be tough, to have a high electrical insulation value to overcome the electro-chemical action to which buried pipes are subject, and to be resistant to acids, alkalies, fungi, bacteria and atmospheric conditions and pollution. Also, it will stretch to fit difficult contours and angles. It is made of P.V.C., has a tensile strength of 35 lb. in 1 in. width, and a self-bonding strength of 12 lb. in 1 in. width with a 3 in. overlap.

FINE GRINDER

A grinder which will cut any form of food ingredient in dry, wet or frozen condition, has been developed by Foodtech, Ltd. It is claimed that the ultra fine cutting processes of the machine, produce a finished condition with a superfine texture like a fine paste. It will cut every kind of meat including calves' and pork bones, or fruit and nuts for making jams, sauces and mayonnaise. Sausages processed by this emulsifier are described as having a bright colour, a clean cut and a meaty texture. The machine is available in four models with capacities of 500 lb. to 1 ton. Prices range from £474 to £834.

STANDARDISED CONVEYORS

Standardised conveyors, similar to those used in the U.S., are now being produced by the Manufacturers Equipment Co., Ltd., at Hull. Previously most conveyor units have been built specially for each particular job. These conveyors have been designed to suit many applications. They can readily be moved from job to job and combined into a full-scale flow system on each.

The manufacturers say that the advantages of this mass-produced system are that it is cheaper than a specially built model, standard lengths can be added as required and parts can usually be delivered quickly as they are available from stock.

Wheel or roller-type conveyors are available in two different widths, with curve sections for right or left turns for any angle. The portable F. 300 model is a heavy duty belt conveyor, which can be adjusted to any pitch angle up to 45°, while the economy model is a light duty type especially designed for economical, inter-floor movement of goods.

News Digest

Bakery Hygiene—the Synthetic Cream Problem

Sir John Charles, chief medical officer of the Ministry of Health, has poured some official cold water on the belief that flour is a major cause of contamination in the bakery.

In his annual report for last year (Cmd. 16., H.M.S.O., 9s.) he recalls that in 1953 a series of outbreaks of paratyphoid fever in South Wales was described in which infection appeared to have been conveyed through the medium of synthetic cream in bakery products. How the synthetic cream became contaminated was not discovered, but there was suggestive evidence that the "causative organism" had been introduced into the bakeries by means of flour from a particular mill.

Sir John now writes: "Attempts since undertaken to demonstrate the presence of paratyphoid or other food-poisoning bacilli in flour have been unsuccessful, and it is therefore doubtful whether flour is likely to be more than a very occasional cause of contamination in a bakery."

Sir John says it has often been pointed out that most of the outbreaks of paratyphoid fever since 1940 have been associated with the consumption of synthetic cream. Up till recently, however, the mode of contamination of the cream has remained obscure. There has been a conspicuous failure to detect chronic carriers among the bakery staff.

Frozen egg

Field evidence collected during outbreaks in the London area in 1954 suggested very strongly that the bakery products associated with the outbreaks had been contaminated from Chinese frozen egg. Samples examined revealed the presence of four different types of salmonella, but the (all important) *Salm. paratyphi B* was not detected.

In August, 1955, other outbreaks were investigated and a connection with a particular batch of Chinese frozen whole egg was revealed.

Says Sir John: "These findings were particularly revealing. Supplemented as they were by others which showed that Chinese frozen egg was frequently contaminated with various members of the salmonella group, including paratyphoid B bacilli, they afforded for the first time a satisfactory hypothesis of the mode of contamination of bakery products.

"It would appear that paratyphoid B or food poisoning salmonellae are introduced into the bakery by contaminated egg products; there they gain access to synthetic cream before this has been added to the bun, cake or other article to be filled, and reach sufficiently large numbers to cause infection in a proportion of the consumers."

Contamination by machines

"The particular way in which the organisms are transferred from the egg to the synthetic cream probably varies. One of the commonest appears to be through contamination of the mixing machines; these are never sterilised, and the cleaning they receive must seldom be sufficient to remove all traces of contamination."

Sir John points out that this hypothesis will have to be confirmed by further observation. But, he states, it is much the most satisfactory that has yet been put forward to account for the close association of synthetic cream in bakery products with paratyphoid fever and food poisoning.

Synthetic cream as it leaves the factories is very nearly sterile, he states, and must therefore be contaminated in the bakeries.

Preventive measures

Sir John writes: "To prevent outbreaks caused in this way two main measures seem to be necessary. In the first place hygienic standards should be laid down, including the absence of salmonella from all home-produced and imported egg: and in the second place permission might well be given to add minimal amounts of hydrogen peroxide to synthetic cream at the factory in order to prevent the growth of any pathogenic organisms that adventitiously gain access to it."

In another section of the report it is pointed out that these imported egg products are a "very important item" in the food economy of the country.

And dealing with imitation cream he writes: "This commodity has been suspect in the epidemiological investigation of some food-borne outbreaks.

"The recent intensive work on the bacteriology of eggs and egg products now suggests that, if and where imitation cream has been the vehicle of a food-borne infection, its contamination may have been of the "cross" variety, originating from some other article which has brought the contamination into a bakery and perhaps left patches of the organisms concerned on bakery equipment."

SEASONAL GREETINGS

We acknowledge with reciprocal good wishes the seasonal greetings sent to us in the form of calendars, diaries, Christmas cards, etc., by our many good friends and, in particular: Aluminium Development Association, Brand and Co., Ltd.; Batchelors Peas, Ltd.; British Cellophane, Ltd.; British Filters, Ltd.; the British Food Fair; the British Food Manufacturing Industries Research Association; the Canned Foods Advisory Bureau, Confectioners Vegetable Colours and Fruit Essences Co., Ltd.; Edwards High Vacuum, Ltd.; Energen Foods, Ltd.; la Foire de Paris; John Gosheron and Co., Ltd.; Houseman and Thompson, Ltd.; Industrial Research and Development Laboratories; Industrias de Alimentacao; Link Information Services, Maconochie Foods, Ltd.; Menley and James, Ltd.; Metal Box Co., Ltd.; Monsanto Chemicals, Ltd.; R. Harold Morgan; Nicholls Dorrity Advertising; R. Ramsden and Son, Ltd.; Sidney-Barton, Ltd.; C. Skerman and Sons, Ltd.; SoFlor, Ltd.; J. and E. Sturge, Ltd.; Justin Alikonis; Elizabeth Orna, Pfizer, Ltd.; and Craigmillar and British Creameries, Ltd.

Krafts to sell direct to retailers

From January 1, Kraft Foods, Ltd., is to sell direct to retailers. This was announced by the managing director, Mr. Frank Frost, in a speech to 400 salesmen attending Kraft's annual sales conference recently.

In a personal letter to all his customers, Mr. Frost explained the policy change: "It is our duty to the consumer to keep prices as low as quality and efficiency of operation can achieve. High speed equipment will do much to offset rising costs. Volume is an important factor and, new products have been and will continue to be added to our range. Some of these new items will need special facilities for distribution—hence our new sales branches equipped with most modern refrigeration."

LEONARD HILL'S WORLD TRIP

Mr. W. Leonard Hill, founder and chairman of the Leonard Hill Technical Group, with his wife and daughters, Lynette and Carol. This family group was photographed at St. Pancras Station, London, just before Mr. Hill and Miss Lynette Hill (second from right) boarded the boat train for the "Himalaya" on which they sailed to Sydney, Australia, via the Cape. They arrived on December 18 and may be addressed c/o Sir Norman Noch, G.P.O. Box 4250, Sydney. Mr. Hill will be conferring with the company's agents, contributors and consultants. He is due to arrive in San Francisco on February 14, in Los Angeles on February 19, and in New York on March 31. Forwarding addresses are c/o Hixson and Jorgensen Inc., 3257 Wilshire Boulevard, Los Angeles, 5; and the Yale Club, 50 Vanderbilt Avenue, New York, 17.

Developing the pig industry

The Government is to set up a Pig Industry Development Authority with wide powers for securing improvements in production, processing and distribution of pigs. It will also continue the existing price guarantee arrangements subject to a gradual raising of grading standards. New standards for bacon pigs are to come into force during 1957. The present free market in pigs and pigmeat will also be continued.

These decisions were announced in a White Paper *The Pig Industry* (H.M.S.O., 6d.) published recently.

The Authority's powers will include the operation of a national pig recording scheme; supervision of progeny testing; the introduction of an accredited herds scheme; the development of a national artificial insemination service; the financing of research and development work and the improvement of market intelligence. The Authority will also be empowered to establish a British Bacon Mark.

The Authority would consist of 17 members appointed by Ministers; 14 appointed after consultation with the various sections of the industry and a chairman and two members appointed from outside the industry. Finance would be provided by a levy on each pig slaughtered.

Dehydrated vegetables save petrol

Mr. L. Keal, national sales manager of F.M.S. (Farm Products), Ltd., points out that his company has a ready-made remedy for the petrol shortage. F.M.S. supplies to ships, large canteens and institutions, large quantities of vegetables already cleaned and prepared, from which all the water content has been extracted so that they require far less transport space than whole vegetables.

Standards for processed cheese

Statutory minimum standards have been recommended by the Food Standards Committee in their second report on processed cheese and cheese spread (H.M.S.O., 6d. net.).

The standards recommended are:

	Minimum butterfat content	*Maximum moisture content*
Processed Cheddar or Cheshire cheese	48% in dry matter	42%
Processed cheese..	45% in dry matter	45%
Cheese spread ..	20% on the product as sold	60%

The report also recommends that flavoured processed cheeses and cheese spreads and the processed cheese or cheese spread constituent of mixtures should be required to conform to the appropriate standards and that the ingredients of cheese spread should be required to be declared on the label.

This is the committee's second report on these foods. The report takes account of representations made following the publication of a report in 1949 and the present recommendations supersede those made in the earlier report.

The report will now be considered by the Ministers concerned. If interested parties wish to submit observations on the recommendations they should address them to the Assistant Secretary, Food Standards and Hygiene Division, Ministry of Agriculture, Fisheries and Food, Great Westminster House, Horseferry Road, London, S.W.1 to arrive not later than January 31.

Should food labels tell more?

Mr. S. Strugnell, the Kent chief inspector of weights and measures, recently recommended that the labelling order be extended to state percentages as well as list the ingredients. He said that the purchaser may not realise when looking at a list of ingredients that the article may in fact contain 95% of one of them. It was also unsatisfactory that a packer could vary the percentages without disclosing this and without altering the price. Furthermore, said Mr. Strugnell, the amount of water contained in the article should be included in the list.

Of 2,733 samples of margarine tested under the Food and Drugs Act 1956, only 237 were unsatisfactory, many of them because of minor irregularities which had now been corrected by the manufacturers. Of those brands which were declared to contain 10% butter, only one had less than 8%, but none more than 10%, the maximum allowed by law, which permits an error of ±2%.

Anglo-Australian wheat agreement

About 750,000 tons of Australian wheat and flour may be sold in the U.K. each year for the next five years, according to a joint communique issued by the President of the Board of Trade, Mr. Peter Thorneycroft, and the Australian Minister for Trade, Mr. J. McEwen, at the conclusion of the U.K.-Australian trade talks recently.

The heads of agreement reached at the talks will form the substance of a new trade agreement to replace the agreement of 1932. This will be drawn up early this year.

Mutual tariff preferences and duty free entry for each others' goods will be maintained by Australia and Britain. Specific arrangements have been made between the two Governments about a wide range of trade and related matters, including anti-dumping and countervailing duties, agricultural policies, transport and communications and the disposal of surpluses.

New engineering shops

Production has now commenced in the new Marfleet Engineering shops built and equipped in Hull at a cost of £350,000, by J. H. Fenner and Co., Ltd.

Production of mechanical power transmission engineering lines including Taper-Lock bushes and pulleys, Torque-Arm Speed Reducers, couplings and other lines is being transferred from the company's factory at Heckmondwike, West Yorkshire, to the new plant. A number of key workers have been transferred from West Yorkshire but most of the new workers required in Hull will be recruited locally.

A considerable proportion of the production in Hull is for export to overseas markets.

New factory for radiant heater manufacture

A new factory for the manufacture of Radisil radiant heaters introduced last February has been erected by Hanovia (Lamps Division of Engelhard Industries, Ltd.) at their premises in Bath Road, Slough, Bucks. The new factory, which was officially opened by the Mayor of Slough recently, has a floor area of 10,000 sq. ft., and will enable the output of Radisils to be increased to over 6,500 units per week. Full-scale production can now commence on the industrial versions of the heater, and a larger version of the domestic model (48 in. long with a choice of two elements rated at 1,500W and 2,000W) has also been introduced.

The new single-storey factory is the first to be entirely warmed by Radisil heaters. Although a large window space is involved, the installation is claimed to be most successful—a maximum of 120 kW being sufficient to heat the entire working area. The installation in this case comprises 80 four-ft. 1·5 kW Radisils fixed alternately with the lights on the ceiling, their design ensuring that radiation is "beamed" down to the working areas without being affected by cross draughts. Operating costs have consequently been kept to a minimum, since localised heating in this manner is much less expensive than by warming up the entire air mass in the factory.

Erections and Extensions

Tony's Food Products, are having a factory built at Portsmouth.

▪

T. Errington and Son, Ltd., bakery engineers, Southsea, have plans in hand for building factory and office premises in Rodney Road, Southsea.

▪

Birkenhead and District Co-operative Society, Ltd., have had plans prepared for the erection of a pork factory on a site at Marshall Street, Birkenhead.

▪

Chivers and Sons, Ltd., preserve manufacturers, have received approval from Montrose Dean of Guild Court for an extension to their jam factory premises in Commerce Street, Montrose.

▪

Polyfoil Papers, Ltd., 23-25, Packington Road, Acton, London, W.3, have had plans prepared for the erection of a storage building at Acton.

▪

Velma Bakeries, Ltd., have had plans prepared for the erection of extensions to their premises at Crownpoint Road and Coulters Lane, Dennistoun, Glasgow.

▪

Carr and Co., Ltd., biscuit manufacturers, have had plans approved to erect a process block in Church Street, Carlisle.

▪

William Younger and Co., Ltd., brewers, Claremont Terrace, Newcastle-on-Tyne, have plans in hand for the early erection of a bottling store in Claremont Street, Newcastle-on-Tyne.

J. Valente, Church Street, Seaham, Co. Durham, are having plans prepared for the proposed erection of an ice cream factory on a site at the corner of Hendon Road and Tees Street, Sunderland.

▪

J. Fisher, Ltd., 10, Booth Place, Stirling, Scotland, have had plans approved for the erection of a bakery at Stirling, at a cost of £12,000.

▪

Spillers, Ltd., food manufacturers, 40, St. Mary Axe, London, E.C.3, have had plans approved for the construction of a warehouse in St. Lawrance Road, Newcastle-on-Tyne.

▪

The Co-operative Wholesale Society, Ltd., are planning to build a mineral water factory on a site at Handsworth Road, Sheffield.

▪

Twining Crosfield and Co., Ltd., tea merchants, are having plans prepared for the erection of extensions to their premises at Wellclose Square, London, E.1.

▪

The Distillers Co., Ltd., have had plans approved to build a warehouse at their Cambus Distillery.

▪

Percy and Halden, Ltd., fats and oils manufacturers, have plans under consideration by Glasgow Corporation for the demolition of premises in Admiral Street and the erection of a factory on the site.

▪

J. and E. Hall, Ltd., have had plans drawn up for extensions to their premises in Byron Street, Glasgow, W.1.

Foil wrapping

Referring to our note on p. 537 of December issue headed "Economical foil wrap" Fisher's Foils, Ltd., state:

"This is no new saving, it is merely a matter of opinion and, in some cases, the type of machinery employed that settles whether plain or embossed foil is used. That plain foil printed on the dull side has always been cheaper is not disputed. It has been cheaper since the early days when embossing was introduced to improve and speed up the flow of wrapping. The process of embossing increases the ductility of the foil, which makes wrapping faster, easier, and more positive.

"Plain foil is still chosen by a few firms in certain cases to give a different effect, rather than to provide a lower cost, which others say is counteracted by its lower ductility."

Fisher's Foils state that they have been printing the dull side of their aluminium foil for many years.

New telephone number

Williams (Hounslow), Ltd., the aniline dye manufacturers have changed their telephone number to Hounslow 7766 (7 lines).

Dearer sugar

Meetings between the Ministry of Agriculture, Fisheries and Food and representatives of the Commonwealth sugar exporting territories have been concluded and full agreement has been reached on the price for 1957, the duration of the Commonwealth Sugar Agreement and the "quota review."

The price to be paid for 1957 "negotiated price" sugar will be £42 3s. 4d. per ton, compared with the 1956 "negotiated price" of £40 15s. per ton.

The Commonwealth Sugar Agreement has been extended for a further year and will now run to the end of 1964. The quota review has also been deferred for another year.

Instant icing

A fondant icing, prepared ready for use has been introduced by Stoddard and Hansford, Ltd. Made from sugar and glucose, it is ready for immediate icing, decorating, or filling of cakes. There is sufficient icing to cover one large cake or twenty small cakes in each polythene bag, which is contained in an attractive window carton. It is supplied in four varieties—white, lemon, pink, and chocolate—and is packed in a 3 doz. assorted (nine of each flavour) display box. The suggested retail price is 8½d. per packet.

New sausage casing

The Hypak *Fibrous* casing made its debut on the Oppenheimer stand at the Smithfield Show last month. Made of synthetic material, the casing is claimed to be exceptionally strong, has excellent smoke permeation quality, the ability to retard moisture loss (important for certain sausage production) and can be "pre-stuck" to allow, if required, the escape of excess juices and fats. The finished effect closely resembles a natural casing. The casing can also be printed. It is recommended for: liver sausage, hard sausage, smoked quality luncheon, solid meat loaves, kosher wurst, and speciality continental sausage products.

New trade marks rules

Some changes in the Rules governing trade marks have been announced by the Board of Trade. The prohibition on the use of the Royal or Imperial arms in trade marks has been clarified. In particular such words as "Royal" or "Imperial" are no longer forbidden unless their use implies Royal patronage, past or present.

The prohibition on the use of the word "Anzac" in trade marks remain in force. The revision also includes an extension from one to two months of the period allowed in certain procedures where applications have to be made to the Registrar.

OBITER DICTA

● For anyone to show a reasonable interest in the nutritional value (rather than the preservation) of food often suggests beards and sandals.—*Letter in The Lancet.*

● Flav-R-Straws consist of a straw with a flavour filter. By using this straw in a glass of milk you can flavour the milk with a variety of flavours. Why not a straw with built-in castor oil?—*Drug and Cosmetic Industry.*

● A boy found drinking beer in a bar was only 13, it was said at Swansea, when a licensee was found not guilty of serving the boy knowing he was under age. The boy said he was 18 but too small for the army.—*Daily Express.*

● Nearly 1½ cwt. of pork pie with eggs were eaten by 39 competitors, including three police sergeants, during 20 hours almost non-stop driving between Paris and the Riviera in the Monte Carlo rally.—*Walls press notice.*

● Today Britain is no longer an island built on coal and surrounded by fish. The modern trawler, costs £200,000 runs on diesel oil and travels thousands of miles to find the fish.—*British Trawler Federation.*

● A U.S. general has ordered that $55 should be stopped over the next two months out of a soldier's pay because he had become too fat. "I will not tolerate a man who cannot stop eating before he has eaten too much," declared the general.—*Sunday Express.*

● If you had a row with your husband over breakfast, would you spend the rest of the day soaking yourself in a bath of rose-water and rubbing yourself with scented oils? That's still the custom in India, where a wife considers the way to her husband's heart is through his nose and not his stomach.—*Fragrance Bureau Press Release.*

● As cashier in a self-service store, I am being driven mad by a regular customer, who always identifies herself with any goods she can't find on the shelves. "Now if I were a half lb. of tea, where would I be?" she asks coyly; or "If I were a jar of pickle, would I be over there?" Next time she's a bag of spuds, I'll mash her.—*Reveille.*

Fingernails or cabbage?

An enquiry sent to the British Baking Industries Research Association recently came from a firm, one of whose customers had complained that fingernails were contained in a portion of a sandwich purchased from the member. Microscopical examination showed that the matter was vegetable in origin but consisted largely of fibres which had become woody in character and had the appearance of nail clippings. It was established that the vegetable matter probably originated from chutney which had been used to fill the sandwich and that the baker was in no way responsible for the intrusion of such objectionable extraneous matter. Those of us who grow cabbages are fully conversant with woody stems!

Dating wrapped foods

The health committee of the Association of Municipal Corporations has been considering a suggestion by Reading Borough Council that manufacturers of wrapped food should be required to mark this food with some indication of the date of production, in place of the normal code sign.

The council said it was particularly worried about articles of a perishable nature and in particular those types of food which were susceptible to "food-borne" infection.

Reporting on this the Association of Municipal Corporations health committee says that in its opinion to require the date of production to be inserted on the wrapping of perishable food would give rise to practical difficulties and would not be likely to contribute effectively to food hygiene.

Can checks—"highly satisfactory"

Of all the cans checked during 10 visits to a cannery in the Chester area, only one was found to be deficient—and this to a slight extent—according to Mr. Stacey Hallard, Chester chief inspector of weights and measures in his annual report. The idea of the visits, when cans were checked at random from the filling lines, was to see that they contained the minimum content of fruit and vegetables prescribed by the code of practice accepted by the canners' associations.

"The majority were overweight—a highly satisfactory result when it is realised that a certain variation of weight was bound to occur due to difference in size, shape and state of ripeness of the fruit or vegetables being canned," stated Mr. Hallard.

Dealing with the Merchandise Marks Act, he said that during the course of routine inspection, particular attention was given to the marking of imported apples, tomatoes and other fruit exposed for sale by retail to ensure that they were properly marked with an indication of the country of origin.

COMPANY PROFITS AND PROSPECTS

Cake profits up

Trading profits of Park Cake Bakeries, Ltd., rose last year from £54,076 to £79,283. The net profit, at £37,620 is an improvement of £9,197 or 32% over the previous year.

The higher profits are attributed solely to full employment of an increased plant capacity at a very high standard of efficiency, with virtually no increase in sales prices in spite of higher costs.

*

Less to salt away

Increased expenditure on advertising and other sales promotion schemes have produced high sales of *Sifta* table salt and *A1* cooking salt, according to the chairman of the Cheshire United Salt Co., Ltd., and the company made record sales last year. In spite of this, the consolidated net profit for the year fell from £83,967 in the previous year to £67,216. "The reason is not far to seek," said the chairman, "the company's packet salt and cooking salt are selling to the public at exactly the same price as five years ago with costs considerably higher."

A final Ordinary dividend of 6% making 10% for the year, together with a bonus of 2½% was paid.

*

Sugar firm's difficult year

"A year of disappointments and frustrations" was reviewed by Mr. Peter F. Runge, chairman of Caroni, Ltd., at their annual meeting recently. 1956 was not only marked by wet harvesting weather and a recurrence of froghopper damage on the highest scale for many years, but by acute labour problems in Trinidad. Strikes in Trinidad were accompanied by acts of violence and intimidation and those who carried on working, did so at personal risk.

Net profit for 1956 was £203,088 compared with £320,852 in 1955. However, Mr. Runge pointed out, the swing in the fortunes of the company is exaggerated as much by the excellence of the 1955 results as the mediocrity of those of 1956.

*

Hovis-McDougall merger

A proposed merger between the McDougalls Trust, Ltd., and Hovis, Ltd., was announced by the chairman of McDougalls at their annual meeting recently. McDougalls plan to buy the Ordinary stock of Hovis.

The new company would be known as Hovis-McDougall, Ltd. Its net assets would amount to £6,830,097.

During the war and until August, 1953, the flour-milling activities of both companies operated under the control of the Ministry of Food. Profits during this period were governed mainly by the results of three pre-war years and do not fairly reflect recent trading conditions. Consolidated profits for the last financial year were McDougalls £707,420 (£791,650) and Hovis £614,903 (£685,932).

*

Horlicks' first million

A group trading profit of £1,060,919 was made by Horlicks last year, announced the chairman, Mr. O. P. Horlick at the annual meeting recently. It is the first time the trading profit has exceeded £1 million.

The net profit amounts to £796,035 against £749,157 last year. In addition to the usual final dividend of 16⅔%, a bonus of 5% was paid, making a total for the year of 35%.

Mr. Horlick pointed out that in common with industry in general, the company has incurred mounting costs, but has managed to absorb them. "The last time we increased the price of our main product—Horlicks—was in 1952," he said, "and the fact that our profits have risen since then is due, apart from increased sales, to economies on all sides, and, in particular, to improved production and packaging methods."

Birds Eye Technical H.Q.

Birds Eye Technical Headquarters is now back in London, its original base in the early days of the company's activities.

In 1950 the Technical Headquarters was moved from the London office to Great Yarmouth, but with the opening of new factories it has been found more convenient for its members to be based in London.

No shortage of glycerine

New plans for the dissemination of technical information about glycerine were announced by Mr. R. E. Huffam, chairman of the U.K. Glycerine Producers' Association recently.

After the war supplies of glycerine were limited by Government allocation, and at the same time demand was increasing. A few months ago, however, the association convinced the Government that adequate supplies were available to meet all needs.

While glycerine was in short supply the association did not publicise developments in its use but now that it is readily available, plans are being made to ensure that the full potentialities and advantages of glycerine and its derivatives are made known to all users.

A new booklet "Glycerine—1,500 ways to use it" is available on request to the association at 43, Portman Square, London, W.1.

Brown and Polson to sell Clark's products

Following the association of Brown and Polson, Ltd., with George Clark and Sons, Ltd., of Millwall, it is announced that the Industrial Production Division of Brown and Polson are now responsible for marketing the range of Clark's caramels, invert sugars and syrups, manufactured for the food, confectionery and soft drinks industries. This new arrangement came into effect on January 1.

A description of Clark's factory appeared in FOOD MANUFACTURE, July 1956, p. 267.

Booklets Received

▸The origins of the essential oils, herbs and spices prepared by Magnus, Mabee and Reynard Inc. for food flavourings and the history of the firm are described in an illustrated booklet issued by them to mark their Diamond Jubilee.

▪

▸Something for everyone is the aim of W. P. Butterfield Ltd., in their new-style house magazine, *The Butterfield News*. The magazine is divided into two main sections, technical and commercial and a personal section, and contains in addition, an excellently illustrated account by the deputy chairman, Mr. A. J. Butterfield, of his visit to New Zealand and Australia.

*

▸In the first of a series of leaflets being published by the Glass Container Publicity Committee, reasons for using glass as a packaging material are summarised under ten headings. Copies of the leaflet, The Advantage of Glass Containers, can be obtained free of charge from Glass Manufacturers' Association, 19, Portland Place, London, W.1.

▪

▸Many different aspects of the preparation of meals are discussed in the 1956 edition of *Industrial Catering*. It includes articles on quick-freezing and its role in the canteen, on industrial nutrition and refrigeration. Sample menus planned to give a scientifically balanced diet are given and suggestions are made for maintaining a steady price ratio in factory canteens.

▪

▸Information on the many uses of their *Telcothene* (polythene) tubing for industrial, domestic and agricultural purposes is given in a recently published booklet by The Telegraph Construction and Maintenance Co. Ltd. While emphasising the value of the tubing for cold water services, the booklet also shows how it can be used for other purposes in the chemical, steel and general engineering industries, and in the laboratory.

People

Mr. R. G. Sanderson

MR. GERALD BUCKINGHAM has been appointed home sales manager of W. J. Bush and Co., Ltd. He joined the company in February, 1946 and has represented them since 1947 in London and the Home Counties.

*

MR. R. G. SANDERSON has succeeded the late Mr. S. E. A. Nicholson as food panel executive of W. J. Bush and Co., Ltd. Mr. Sanderson joined the company in January, 1947 and for five years was assistant to Mr. Nicholson.

*

MR. JOHN BAILLIE of Muirhead, Perth has resigned after 23 years association with the Scottish Federation of Wholesale Confectioners Associations. A past president he was appointed secretary in 1939. At a meeting in Perth he was presented with a cheque and a radiogram to mark his long and excellent services.

*

SIR FRANK SHIRES has been appointed a part-time member of the Monopolies Commission. He was a director of H. J. Heinz Co., Ltd., from 1940, and deputy managing director from 1950 until his resignation in 1955. He is a past president of the Food Manufacturers' Federation and chairman of the Governing Body of the National College of Food Technology.

*

MR. PETER JONES has been appointed to head the newly formed development and research department at Spesco Developments Ltd., manufacturers of polythene packs. Until recently a development engineer with Aluminium Wire and Cable Co., Ltd., Mr. Jones will be co-ordinating research into the modification of polythene film in its finished form to produce special properties for new requirements.

DR G. L. RIDDELL, the Director of Research of The Printing, Packaging and Allied Trades Research Association, is relinquishing his appointment with that body to join Albert E. Reed and Co., Ltd., as head of their expanding packaging research and development division.

*

MR. CECIL W. RODD, group chairman of T. Wall and Sons, Ltd., has been elected president of the Sausage Manufacturers' Association in succession to the late Mr. Henry Palethorpe. Mr. Rodd is succeeded as honorary treasurer by MR. J. W. H. TAYLOR, of C. and T. Harris (Calne), Ltd.

*

LORD SIMON of Wythenshawe has resigned the chairmanship of Henry Simon (Holdings), Ltd. He remains a director and has been appointed president of the company. He is succeeded as chairman by MR. I. HEY, M.SC.(TECH.), M.I.MECH.E., with MR. CHRISTOPHER SIMON as deputy chairman.

*

DR. BERNARD S. SCHWEIGERT has been appointed director of research and education of the American Meat Institute Foundation in succession to the late Dr. Henry Kraybill, who died in September. Dr. Schweigert has served as chief of the Foundation's Division of Biochemistry since 1948 and as assistant director of research since 1953. DR. DELBERT M. DOTY and DR. CHARLES F. NIVEN, JR. have been appointed associate directors of research and education.

*

MR. CHARLES BELL, the Smedley Group's chief engineer, who joined the organisation in 1925, has been made a director of Smedley's, Ltd.

MR. EDWARD E. PRATT, head of Smedley's frozen food production and sales and a director of Ulster Fresh Fish, Ltd., has also been appointed a director of the company.

MR. C. P. C. BARHAM, Smedley's fruit and vegetables buyer for the Kent region, has been made a director of British Fruit, Ltd. He joined the company in 1953 as a buyer.

*

MR. ROBERT W. CRAIG has been appointed departmental manager of the Central London sales department of T. Wall and Sons (Ice Cream), Ltd.

Mr. Craig, who is 40, joined Wall's in 1951 as depot manager at Coventry, after being connected for a number of years with the hotel industry. He succeeds MR. JAMES A. WINNEY, who has joined Wall's marketing headquarters at Park Royal as multiple sales manager in succession to MR. K. B. JOHNSON, who has been appointed head of the newly formed product development department. Mr. Winney, who is 42, joined the firm in 1950 as a sales representative.

Dr. A. Mc. M. Taylor

*

DR. A. MC. M. TAYLOR, B.SC., F.R.I.C., has been appointed assistant to the director of research, of the British Food Manufacturing Industries Research Association. Before joining the Association, where he began work at the Leatherhead laboratories in November, Dr. Taylor was in private practice as a partner in a firm of consultants with interests in the food and associated industries.

MR. D. H. MARTIN, M.A., has been appointed secretary to the B.F.M.I.R.A. in succession to MR. L. A. HARVEY who resigned to take up another post.

Mr. Martin was secretary and bursar to the Governors of Bedales School, and was at one time acting editor of the *Journal* of the Royal Institution of Chartered Surveyors.

New board of Ticklers

Two members of the Tickler family are represented on the new board of directors of T. G. Tickler, Ltd., Grimsby. The new managing director, Mr. W. A. W. Tickler was for six years the southern area sales manager for the firm and his brother, Mr. Edward W. Tickler, who joins him on the board was production manager at the Whitchurch factory of the company.

They are both sons of Mr. W. H. Tickler, and grandsons of the founder Mr. T. G. Tickler and have worked through all the departments of the business.

The new board comprises *chairman*, Mr. R. N. Scott; *vice-chairman*, Sir Alfred Beit; *managing director*, Mr. W. A. W. Tickler; Mr. S. Eden Bushell and Mr. E. W. Tickler and the secretary to the company is Mr. H. J. Guntrip.

£100 for a brainwave

Mr. Charles Bell, director of Smedley's, Ltd., recently presented Mr. R. C. Noon with a wheelbarrow-load of florins and half-crowns to the value of £100. Mr. Noon is a maintenance fitter at the Spalding cannery. He invented a modification to carton forming machines which resulted in a 20% increase in the filling rate without extra labour or overtime payments.

Confectionery veteran

Two anniversaries have just been celebrated by Mr. John Ward of Lawrence Street, York—his 64th birthday and 50 years' service with M. A. Craven and Son, Ltd., sweet manufacturers of York, where he is employed as stores supervisor, after starting with the firm as an apprentice sugar boiler.

Mr. Mark Horsley, the chairman of the company presented Mr. Ward with a cheque and a fireside chair.

Mr. Ward said he hoped to carry on a little longer. He has seen vast changes in the firm. Open boiling fires had been replaced by automatic vacuum machines and hand work had been superseded by fully automatic wrapping and packing while broadcasting and dictaphones had ousted the messengers which once were sent from shop to shop.

Although he had been engaged in making sweets for 50 years, Mr. Ward confesses he eats them only rarely these days but says, "I do like a brown mint."

"The Chiltern Hundreds" played by W. J. Bush company

For their 1956 production the W. J. Bush Dramatic Section presented "The Chiltern Hundreds" at the Cripplegate Theatre, Golden Lane, London, from December 18-21.

One of the first tasks of the amateur producer is to get his actors to enjoy their work. If they are comfortable on the stage the job of pleasing the audience is half won. Mr. Eric Bush who, as usual, produced and took a leading role, succeeded in making his cast quite at ease. He was aided by the play itself, a comedy set in the politically changing days of 1945. The Earl of Lister's Tory sprig, Lord Pym, loses the local seat his family have held for generations to a Labour candidate. His American fiancée is disgusted, not so much by the defeat but by the spineless acceptance of the reverse by Lord Pym. The plot thickens when the Labour M.P. is translated to the House of Lords. A by-election ensues and Lord Pym decides to try again, this time as a Labour candidate. His visions of an unopposed election are destroyed by the appearance of a Tory candidate, none other than Beecham, the Earl's locquacious and philosophical butler. Beecham wins the seat but, having demonstrated his point, that tergiversation does not pay, resigns by applying for the Chiltern Hundreds, leaving the field clear for Pym to have another try.

So in the end Pym is reconciled to his fiancée, Beecham wins the hand of the flirtatious maid who had temporarily dallied with Pym on the rebound, and the crusty Earl is left in peace to shoot rabbits, discourse on the mating habits of salmon, and cope with the domestic chores laid upon him as a result of the emancipation of the working classes.

Mr. Bush gave a good-humoured performance as the Earl and Mr. Maurice Lockwood got the utmost from the fruity role of the butler. Miss Jean Ball was a decorative fiancée and Miss Colleen Cann played the skittish maid for all the part was worth. Mr. Percy Hogg handled the part of Lord Pym with pleasant competence and other good work was done by Miss Beryl Jackson, Miss Rhoda Wright and Mr. John Cox.—W.G.N.

Bakery technologists' conference

The British Cake and Biscuit Association is holding its fourth Technologists' Conference on Friday, February 8, at the Connaught Rooms, Great Queen Street, London, W.C.2.

An exhibition of packages will be held in conjunction with the conference and member firms are invited to send sample packets or tins of their products.

There will be two combined meetings for all delegates, one to open the conference in the morning, and the second for the final session in the afternoon.

Details of the subjects and speakers are as follows:

Engineering—Production/Biscuits.

(*a*) "Sheeting of Doughs."
Mr. P. L. Butler, T. and T. Vicars, Ltd.

(*b*) "Automatic Process Control in the Biscuit Industry."
Mr. M. Wright, Dunford and Elliott, Ltd.

Production/Cake.

(*a*) "The Advantages of Formula Balance and Some Thoughts on High Ratio Cakes."
Mr. J. A. Snelling, Thos. Hedley, Ltd.

(*b*) "Aids to Production—Cake and Flour Confectionery."
Panel of Experts.

Sales.

(*a*) "Sales/Presentation."
Mr. E. R. Conradi, Metal Box Co., Ltd.

(*b*) "Sales/Selling."
Mr. R. Allin. Brown Bros., Ltd.

Combined Meetings.

(*a*) "Quality Control in the Factory."
Mr. Richard White, Percy Boyden and Co., Ltd.

(*b*) "Hygiene."
Mr. A. McL. Johnston, C. H. Elkes and Sons, Ltd.
Mr. T. Morley Parry, Ministry of Health.

Fisheries exhibition

The first International Fisheries Exhibition is to be held in Lowestoft from October 21 to 26. The exhibition will cover all aspects of the commercial fishing industry and has been granted the patronage of the White Fish Authority and the Herring Industry Board. During the time of the exhibition the Herring Industry Board will revive the medieval Herring Fair at Lowestoft and Yarmouth.

Materials handling dinner

The fourth annual dinner of the Institute of Materials Handling took place recently in London, and was attended by over 250 people.

The growing importance of materials handling as a means to speeding production and improving Britain's general economy was stressed by the main speaker of the evening, Mr. Harold Wilson, M.P., a former Labour minister and an authority on financial matters.

More light-hearted speeches were made by Mr. Kenneth Horne, chairman and joint managing director of Chad Valley Co., Ltd., and a radio and television personality, and by Mr. Gavin C. Paterson, a director of Paterson Hughes Engineering Co., Ltd., and a founder member of the Institute.

Gas Exhibition

More than 10,000 industrialists are expected to visit the "Gas At Work In Industry" exhibition—the first of its kind to be held in London—at the Royal Horticultural Hall, from January 22 to February 2, 1957.

Over 70 manufacturers have combined in this unique exhibition to show the manifold ways in which gas plays its part in the world of industry. Exhibits on show will range from gas-fired water and space heaters, to highly complex pieces of equipment for shell moulding, tool cutting and flame hardening—many of them electronically controlled.

It will be a "live" show, with more than half the appliances displaying, through demonstrations, the work they normally do in the factory and workshop. Visitors will be able to "try their hand" at working some of the processes of manufacture and for those who like to know how it works there will be numerous cut-away models.

One of the highlights of the exhibition will be a central feature displaying more than 100 products in the manufacture of which gas has played an important part.

The exhibition is organised by four Area Gas Boards—North Thames, South Eastern, Southern and Eastern—whose experts will be on hand to explain the functions of the exhibits and give advice to industrialists.

Food News Overseas

What is tenderness?

A three-year research programme designed to advance scientific understanding of the physical nature of tenderness in meat and to provide an insight into the changes induced by various tenderising substances and agents has been undertaken by the American Meat Institute Foundation at the University of Chicago.

Food equipment for Thailand

The Preserved Food Organisation, Provisional Office at the Naval Secretariat, Phra Rajawong Derm, Dhonburi, Thailand, is planning to build plants for the production of preserved food, as well as the installation of machines, implements and various accessories.

They require equipment for processing vegetables, meat, sausages, fish, bottling or canning coconuts, for grinding curry ingredients, for canning fruits and juices, and for jam making. Each set of equipment should have a capacity of from 8,000 to 10,000 cans or bottles a day.

Also required is ancillary equipment for packaging, cleaning and sterilising, heating, plant for refrigeration and testing, and plans of factories suitable for erection in a hot climate. Tenders should be submitted before March 1, 1957.

"Australia" is on the label now

The most important achievement during the year, says the annual report of the Australian Dried Fruits Control Board for 1955-56, is the "increased percentage of fruit sold under the Australian price ticket. Previously the great bulk of dried fruit was sold as 'Empire'."

A contribution of £1,250 to the Imperial College of Science, mentioned in the report, is an added indication that the Australian Dried Fruits Control Board regards science as an essential aid in the solving of problems related to the industry.

100,000 gal. more

Instead of the expected fall of 100,000 gal. in Australian wines sent to the U.K. during the 1955-56 season, there was in fact an increase of 100,000 gal.

This was largely due to the success of the trade drive launched in Britain by the Australian Government, it is claimed in the annual report of the Australian Wine Board.

Mr. Colin Mackay, U.K. representative of the Australian Wine Board, commenting on this increase said: "If only Britain would grant an extension of Preferences to Empire wines we would be able to offer very good quality wines at half the price of any equivalent brand at present in the country."

Commercial lysine

What is claimed to be the first commercial fermentation of lysine, one of the amino acids considered essential to human and animal nutrition, has been announced by Chas. Pfizer and Co., Inc.

The development was made possible by the fermentation techniques with which Pfizer also manufactures vitamins, antibiotics, hormones and other chemicals. In the lysine process these new techniques are claimed to produce a high purity product, which is free of D-lysine—a form of the nutrient which cannot be used by the body.

Lysine is one of eight amino acids —all "building blocks" of proteins— which cannot be synthesised by the body in amounts adequate to maintain tissue-building and good health. In the United States, Pfizer will market the essential amino acid in the form of L-lysine monohydrochloride. This is a pure white crystalline, 80 mesh powder with a guaranteed potency of not less than 98%.

New import rules in Sweden

As part of a revised system for pricing agricultural products, Sweden has introduced new regulations for the import of agricultural products, fats and fatty acids.

Under the new system the Customs duties have been abolished, and will be replaced by import charges. The scheme is subject to review at the end of each three-year period, dating from September 1 last, but the charges will be varied upwards or downwards during the three-year period at the discretion of the State Agricultural Board, subject, however, to specified maximum charges. The intention is that the charge established at the beginning of the period will remain constant so long as the market price lies within certain upper and lower price limits.

New slaughter device

Encouraging tests of an instrument designed to dispatch meat animals quickly and painlessly are reported by the American Meat Institute.

The device, with the overall appearance of a toy "Space Patrol Blaster," stuns the animal with a high-pressure blow, thus eliminating any possibility of suffering or pain. Extensive tests in several meat packing plants during the last year indicate the instrument has both humane and technical advantages over standard methods used in the dispatch of beef animals. Experiments with calves, pigs, and sheep are now getting under way.

A special blank cartridge, triggered by a nubbin applied to the animal's forehead, activates a mushroom-shaped knob of aluminium. The knob generates a tremendous impact over its 2-in. travel and stuns the animal instantly, without bone fracture or haemorrhaging. It was developed by Remington Arms Co., Inc., working in collaboration with joint committees of The American Humane Association and the American Meat Institute.

Milling firm acquired

Hercules Powder Co. and the Huron Milling Co. of Michigan, U.S.A., have approved a plan for the acquisition of Huron Milling by Hercules.

Huron, with more than 500 employees and net sales last year of approximately $12 million, processes wheat flour into proteins for food supplements, natural food flavouring, and wheat starch. One of its major activities is separating proteins from wheat flour, and converting the proteins to their amino acids which are then used to make products such as: Huron MSG a monosodium glutamate flavour enhancer; HVP, a mixture of the natural amino acids from wheat, used in the form of liquid, paste, and dry sauces in food flavouring; and *Age-It*, used for improving the flavour and tenderising meat.

Another major product is vital gluten, the protein fraction of wheat, used to enrich breakfast cereals, bread, and other bakery products.

With the increase in nutritional research and knowledge, the use of proteins and amino acids is expected to increase. Research and development by Hercules is planned to obtain more products from the protein for food uses.

New Companies

Alfonal, Ltd. (574163.) To carry on bus. of mfg. processing, modifying, and marketing and granting licences for the mfr. of foodstuffs and beverages of all kinds. £2,000. Dirs.: Rt. Hon. Baron Glenconner, M. F. P. Lubbock, Senor Alberto Fontana and G. F. Taylor.

Ambassador Food Co., Ltd. (F.4571.) British address: 10, Stanhope Gate, London, W.1. Regd. in Jersey, Channel Islands, in 1922. £25,000. Persons authorised to accept service: E. Cowan and C. L. Broadway.

A.V.P. Laboratories, Ltd. (573736.) 41, Church Street, Oswestry, Shropshire. Mfrs. of and dlrs. in animal foods, etc. £300. Subs.: R. H. Hughes and G. F. Owens.

Colcloughs (Confectioners), Ltd. (574030.) Heuthwaite Lodge, Wetherby, Yorks. £5,000. Dirs.: C. T. S. and Mrs. A. Colclough.

Derby Malt Vinegar Co., Ltd. (573379.) 200, Kedleston Road, Derby. To take over bus. cd. on as "Derby Malt Vinegar Brewery Company" at Derby. £20,000. Dirs.: M. L. Roe and G. C. Roe.

Direct Potato Supplies, Ltd. (574052.) 30, Aubrey Street, Hereford. £100. Dirs.: A. E. Wood, P. B. and S. G. K. Wright, R. E. P. Nicholas, Mrs. L. R. K. Wright and Mrs. M. Wilkes.

European Food Products, Ltd. (573746.) 4, Cavendish Place, W.1. £100. Dirs.: T. F. Chrominski, Mrs. A. S. and J. Roszkowski.

Gay-Addis, Ltd. (573456.) Mfrs., mchts. of and dlrs. in food products, patent foods, etc. £100. Subs.: P. O. Ansell and A. Matthews, 116, Chancery Lane, London, W.C.2.

Girling's Bakeries (Welling), Ltd. (574142.) 3 and 5 Central Avenue, Welling, Kent. £2,000. Dirs.: F. A. and Mrs. D. W. Girling.

David Graaff Foods (London), Ltd. (574820.) 9-10, Fenchurch Street, London, E.C.2. £100. Subs.: S. E. Q. Henriques and H. C. Riddletone-Holmes.

Irada, Ltd. (573751.) Food mfrs., canners, etc. £2,000. Subs.: Doris M. Ball, 663, Greenford Road, Greenford, Middlesex, and E. D. Russ.

Italian Imports, Ltd. (573967.) 30, Stockwell Park Crescent, London, S.W.9. Importers and exporters of and dlrs. in canned or frozen foods, fresh fruit and vegetables, etc. £3,000. Subs.: Vivien L. French and C. Hawkes.

Lindsay Jamieson, Ltd. (574019.) 2-5, Old Bond Street, London, W.1. Wine and spirit importers, mfrs., shippers, merchants, etc. £100. W. W. Jamieson.

Justerini and Brooks (Export), Ltd. (573753.) Spirit merchants and exporters, spirit blenders, wine and spirit merchants, etc. £1,000. Subs.: B. Stuart-Fisher and S. Disborough.

Lixtonite, Ltd. (573401.) 6-8, Sackville Street, London, W.1. To produce and deal in foodstuffs and minerals, etc. £100. A. S. Tucker and D. E. Millar.

Selofarm, Ltd. (574157.) Mfrs. of and dlrs. in provisions, foodstuffs, etc. £100. Dir.: M. S. Josephs.

Arthur Sharpe (Enterprises), Ltd. (574765.) 183, Altway, Aintree, Lancs. Mfrs. of and dlrs. in sweets, chocolates, cakes and confectionery. £5,000. Dirs.: C. R. Bleasdale and Alice Vyner-Brooks.

From Jordan and Sons, Ltd., Company Registration Agents, 116, Chancery Lane, London, W.C.2.

Technical Press Review

JANUARY

Dairy Engineering.—New Trends in Bottle Washing Design; Planning the Smaller Dairy; A New Stainless Steel Butter Churn; Dairy Plant in the 1956 Vochema Exhibition.

World Crops.—World Food and Agricultural Situation; Green Coffee Production and Distribution; Report on the 1956 Smithfield Show; Selection of the Tea Plant.

Manufacturing Chemist.—Preview of the Packaging Exhibition; Organotin Compounds Find New Uses; Chemicals from Ketene; Antibiotics and Plant Protection; Reaction of Protein with Cyanate; Progress Reports: Analytical Chemistry, Cosmetics, Pest Control.

Automation Progress.—Printed Circuits in the Electrical Industry; British Progress in Digital Computer Design; What is Required of Commercial Electronic Computers; Television in Office and Factory; Automating the Engineer's Task; A Data Processing Service; Analogue Flow Board for Supply System; Trends in American Automation.

Fibres.—Keeping Fabrics Clean—2; The Search for and Production of New Fibres, 1; Developments in Textile-Machinery-Pirn Winding; International Conference on Textile Labelling—2.

Corrosion Technology.—Mercury Containing Anti-Fouling Paints on Aluminium Alloy Hull Plating; Cathodic Protection for Small Shipping; Epikote Resins in Marine Applications; Combatting Heavy Fuel Corrosion and Cylinder Wear in Marine Engines; Anti-Corrosion and Anti-Fouling Paints for Ships' Hulls; Corrosion, Its Causes, Cost and Prevention.

Chemical and Process Engineering.—Stainless Steel—The User's Point of View; Platinum as a Material of Construction for Chemical Plant; Chemical Engineering Review: Metallurgy; Recent Developments in Aluminium and its Alloys for Chemical Engineering; Review of the Salon de la Chimie; Economical Production of Chlorine.

Paint Manufacture.—Additives for the Paint Industry; Use of Cationic Surface Active Agents; Application of Butyl Titanate; Special Instruments for the Industry; Vapour Phase Chromatography.

Atomics.—Nuclear Power for Aircraft; Liquid Metals and Nuclear Power; Reactor Technology for the Engineer; Nuclear Power and Gas Turbines—2; French Atomic Power Development; The Problem of Liquid and Gaseous Effluent Disposal.

Trade Marks

CELAMTOTI.—754,829. Coffee and tea. **Dodwell and Co., Ltd.**, 24, St. Mary Axe, London, E.C.3.

CHEDAMOON.—754,060. Cheese. **Trengrouse and Nathan, Ltd.**, 51 to 55, Tooley Street, London, S.E.1.

CHEESOX.—754,403. Processed cheese and processed cheese spreads. **Surrey Creameries, Ltd.**, 10, Commonside East, Mitcham, Surrey.

CHEEZOX.—754,557. Processed cheese and processed cheese spreads. **Surrey Creameries, Ltd.**, 10, Commonside East, Mitcham, Surrey.

CHEZAM.—755,024. Processed cheese and processed cheese spreads. **Surrey Creameries, Ltd.**, 10, Commonside East, Mitcham, Surrey.

CHEZOX.—754,558. Processed cheese and processed cheese spreads. **Surrey Creameries, Ltd.**, 10 Commonside East, Mitcham, Surrey.

CRESTA. — B753,714. Sauces. **Co-operative Wholesale Society, Ltd.**, 1, Balloon Street, Manchester.

FRUTELLA.—737,605. Non-medicated confectionery and sweetmeats, all being fruit flavoured. **Van Melle's Biscuits-en Toffeefabrieken N.V.**, Olympia-weg 10, Rotterdam, Holland, and c/o George Fuery and Co., Newhall Chambers, 8, Newhall Street, Birmingham, 3.

FUNAMTOTI.—754,829. Coffee and tea. **Dodwell and Co., Ltd.**, 24, St. Mary Axe, London, E.C.3.

LAUGHING COW.—731,752. Non-medicated sugar confectionery. **Batger and Co., Ltd.**, 566, Cable Street, Stepney, London, E.1.

MEADOWLARK.—752,496. Meat and meat products (for food). **The Ohio Provision Co.**, 6101 Walworth Avenue, S.W., Cleveland, Ohio, U.S.A., and c/o Marks and Clerk, 57 and 58, Lincoln's Inn Fields. London, W.C.2.

MERRYPOP.—747,699. Corn for making popped corn. **Ackroyds (London), Ltd.**, 12, John Street, London, W.C.1.

MULTIMIL.—750,330. Foodstuffs for animals. **Multiforss, Ltd.**, Steinhausen, Zug, Switzerland, and c/o Trade Mark Protection Society, 50, Lincoln's Inn Fields, London, W.C.2.

OPROCO.—752,498. Meat and meat products (for food). **The Ohio Provision Co.**, 6101, Walworth Avenue, S.W., Cleveland, Ohio, U.S.A., and c/o Marks and Clerk, 57 and 58, Lincoln's Inn Fields, London, W.C.2.

PAINTBOX.—745,256. Non-medicated confectionery. **Chix Confectionery Co., Ltd.**, 15D, Argyle Avenue, Trading Estate, Slough, Bucks.

QUAKER FLAKO.—744,890. Preparations for making pastry. **Quaker Oats, Ltd.**, Bridge Road, Southall, Middlesex.

SNOWCAP.—753,839. Chocolate and non-medicated sugar confectionery. **White Hudson and Co., Ltd.**, 41A, Shakespeare Street, Southport, Lancs.

SPRINGSIDE.—B751,025. Dead poultry. **Le Marquand Bros.**, "Springside," Trinity, Jersey, and c/o Gill, Jennings and Every, 51-2, Chancery Lane, London, W.C.2.

STRATO.—754,388. Non-medicated confectionery. **Margaret Burchell**, 10, Orchard Way, Bognor Regis.

TOKOMACS.—754,378. Non-medicated chocolate confectionery. **Hainault Couvertures, Ltd.**, 89, Hainault Road, Romford, Essex.

Information and Advice

This Service is available to subscribers to FOOD MANUFACTURE. If a stamped addressed envelope is enclosed replies will be sent by post. Enquiries cannot be answered by telephone.

Lemon curd

B.7908. *Please supply a formula for lemon curd.* (Clifton, nr. Manchester)

The following might be used as a basis for experiment:

Water	10 lb.	Agar-agar ..	½ lb.
Sugar	29 ,,	Egg yolk ..	1 ,,
Glucose ..	26 ,,	Citric acid ..	4 oz.
Margarine ..	15 ,,	Oil of lemon ..	3 ,,
Cornflour ..	3½ ,,	Colouring.	
Frozen egg albumen ..	3½ ,,		

Heat the water, sugar, and glucose to 240°F. and add the other ingredients, with the exception of margarine. Bring the curd to the boil, add the margarine and pass the whole through a strainer of about 30 mesh. Run into containers and allow to cool. The product should not run over in the oven.

Milan cake

B.7907. *Please supply a recipe for Milan cake—Panettone.* (London, S.E.1)

You might use the following recipe as a basis for experiment:

Flour ..	20 lb.	Eggs	4 doz.
Indian cornmeal	2 ,,	Yolks	5 ,,
Granulated sugar ..	3½ ,,	Yeast	6 oz.
Table salt ..	1½ oz.	Butter	4 lb.
Cinnamon powder ..	12 drams	Fruit, chopped ..	6 ,,
		Rum	1 qt.

Proceed as with buns and the like, making a sponge with a quarter of the flour. Roll into ½ lb. and 1 lb. balls on pans. Allow to rise and wash with egg. Open out with star cut and sprinkle with coarse sugar. Mild oven.

Brandy sauces

B.7500. *Please give us a recipe for a high-class brandy sauce.* (London, E.8)

We know of no commercial recipe for a brandy sauce that will keep indefinitely. However, the following recipes for "hard" and "soft" sauces will keep for some time.

"Soft" sauce

	%
Brandy	20
Water	30
Egg-yolk	12
Sugar	18
Glycerol	18
Cornflour	2

Make a paste of the cornflour with part of the water, then add the rest of the water and the sugar to this and boil. Now stir in the glycerol, cool to 180°F. and mix in the egg-yolk with vigorous hand or mechanical stirring but without including air. Lastly stir in the brandy and bottle while still warm, leaving as small an airspace as possible in the neck of the container.

"Hard" sauce

	%
Egg yolk	10
Butter	50
Icing sugar	20
Brandy	20

Whisk the first three ingredients together, then add the brandy slowly, continuing whisking. Both hard and soft sauces are improved by emulsification. Jars must be hermetically sealed to prevent evaporation of the spirit.

Information supplied

B.7945. *Information about cooked pork sausages.* (Auckland, New Zealand)

B.7946. *Formula for tomato juice and diabetic jams.* (Naples)

B.7947. *Suppliers of potato starch.* (Hull)

B.7948. *Suppliers of dried tomato powder.* (Liverpool)

B.7949. *Recipes for tomato sauce and meat paste.* (Dunedin)

B.7950. *List of food wholesalers for Scotland.* (Airdrie)

B.7951. *Recipe for Cardamom spice.* (Edinburgh)

B.7952. *Advice on can-closing machines.* (Santiago)

B.7953. *Information on patent gluten preparation.* (Croydon Park)

B.7955. *Information on manufacture of vinegar.* (Cuba)

B.7956. *Recipe for ginger bread men.* (Birkenhead)

B.7957. *Names of firms operating schemes of planned maintenance.* (Edinburgh)

B.7958. *Information on use of sorbic acid in food preservation.* (Fraserburgh)

B.7959. *Suppliers of coarse grade potato flour.* (Patrington, Yorks.)

B.7961. *Information on manufacture of fish pastes.* (Victoria, Australia)

B.7962. *Advice on preventing discoloration of peeled potatoes.* (Birkenhead)

B.7964. *Formula for marzipan.* (Kildare)

B.7966. *Suppliers of second-hand plant.* (Grange-on-Sands)

B.7967. *Details of manufacture of processed cheese.* (Belfast)

B.7968. *Suppliers of steam pressure cookers.* (Hull)

B.7969. *Information on manufacture of brine.* (Newcastle)

Recent Patents

762,353. AITON AND CO., LTD.: Apparatus for distilling liquids.
762,580. B. RUSSO, W. GUTFELD and K. POPPER: Recovery of sugar.
762,612. METALLGES A.G.: Method of and apparatus for roasting, drying and cooling foodstuffs.
762,319. J. AND E. HALL, LTD.: Freezing apparatus.
762,648. G. F. JUNCKER: Process for the production of a fodder from straw or other lino-cellulose-containing materials by alkali treatment, and, if desired, mixing of the alkali-treated material with other foodstuffs.
762,335. BRONSWERK N.V.: Apparatus for the sterilisation or pasteurisation of the contents of bottles, cans or similar containers.
762,664. N. G. THOMPSON: Apparatus for making and storing solutions of gas in liquid, particularly carbonated beverages.
762,677. HUMIDITY CONTROL, LTD.: Cooling of bread.
762,780. PURDY MACHINERY CO., LTD.: Labelling machines.
762,787. DAVIDSON AND CO., LTD.: Method of withering or drying tea or similar materials.
762,798. CO-OPERATIVE WHOLESALE SOCIETY, LTD.: Bottle crates and crate inserts.
763,137. KUSTNER FRERES ET CIE S.A.: Packages for foodstuffs.
763,361. J. E. CRUICKSHANK: Vats for cooking potato crisps.
763,263. BAKER PERKINS, LTD.: Preparation of dough pieces for bread.
763,265. J. LYONS AND CO., LTD., P. WHITE and H. BOWNER: Manufacture of foodstuffs.

ABSTRACTS OF BRITISH PATENTS

Deep fat fryer

In a gas-heated deep fat fryer, the pan has sets of immersion tubes constituting flue-ways which connect a combustion chamber at the front to a flue at the rear of the pan.—760,393. *North Eastern Gas Board.*

Sausage packing

A wrapper for sausage casings of animal origin comprises a continuous impermeable foil incorporating a filler material capable of reducing transmission of U.V. light of 1800-2500 Å., in a quantity sufficient to give a cloudy appearance to the foil without preventing the general outline of the wrapped article being visible.—750,797. *Oppenheimer Casing Co. (U.K.), Ltd.*

Smoking of bacon

A high degree of cleanliness with freedom from ash deposit is achieved by means of separate drying and smoking stages. A controlled air flow is circulated at a suitable temperature and humidity over the surface of the sides of bacon during the first stage. At a later stage ash-free smoke is added to the air stream at a controlled temperature from an isolated smoke producer.—760,592. *Danish Bacon Co., Ltd.*

Process and apparatus for making bread

Bread bars of the "grissini" type are produced by extruding dough to form endless bars, moving these on a conveyor belt into a proving chamber and subsequently drawing, cutting and baking the bars.—759,880. *F. G. Battagino.*

Grated cheese

Dried, natural high-fat cheese, in comminuted form, is mixed with fine particles of processed high-fat cheese. The mixture is tempered to stabilise the fats so that the mixture does not normally agglomerate by oiling-off. — 755,772. *Kraft Foods Co. (U.S.A.).*

Liquid sterilisation

Milk, etc., is passed through a venturi-restricted passage, and is heated to sterilisation temperature by steam when in the maximum flow velocity part of the tube. —759,990. *Alpura A.-G.*

Caramel colour manufacture

A carbohydrate syrup with a reducing sugar content (calculated as dextrose) of 60-100% is acidified to *p*H < 4·0 and heated to 170-250°F. until the reducing sugar content is 20-65%; an alkali (NH_3 or an NH_4 compound) is then added to increase the *p*H to 3-3·8 and the syrup is caramelised at *p*H 2 6-3·8.—759,963. *Union Starch and Refining Co.*

Sugar machinery

A batch rolling machine of the taper-roller type, for working the batch into conical form and then into continuous rope form incorporates a multiple profiled-roller drawing device. One roller assembly is readily removable for varying the number of assemblies.—759,223. *F. Theegarten.*

Sterilisation of milk

Bottles are secured in tiers in a drum which rotates about a horizontal axis during the sterilisation.—759,238. *W. Gorbig, G.m.b.H.*

Chocolate enrobing machine

An adjustable half-round valve controls the outlet slot of the machine hopper.—759,132. *W. D. Meagher.*

Precooked cereal food

A cold-set, vacuum-expanded cereal food (*e.g.* rice, oats, wheat, farina, or hominy) with enlarged cells, a starch content which is gelatinised before enlargement of the cells, rapid water-absorption and freedom from scorching. The cereal is treated with steam until cooked, then expanded by shooting into an atmosphere at < 2 in. Hg absolute pressure.—759,478. *Guardite Corp.*

Meat cradle

Meat undergoing cooking is lashed on to a cradle by string engaging with lugs, etc., projecting from the cradle sides.—752,239. *H. H. Tanner.*

Confectionery product

A composition for use in a whipped sugar topping comprising an edible, water-soluble cellulose alkyl ether, sugar and a foam stabiliser, *e.g.* a sodium alginate/soluble calcium salt mixture.—760,928. *General Foods Corp.*

Animal feeds

Fat soluble vitamin supplements for animal feeds are produced by globulising a liquefied mixture of a high melting fat, a phosphatide and a fat soluble vitamin, together with defatted soya flour, and solidifying the globules. Fats of melting point as high as 68-70° may thus be used to give the stable sources of vitamin A.—760,011. *A. Rosenberg.*

Preservation of milk

The keeping quality of milk and products such as butter, milk powder and condensed milk is improved by addition of a mixture of glycerol and an acid or alkali (1 pt. per 1,000) in water or an aqueous salt solution.—760,052. *J. P. Jensen.*

Animal feedstuffs

A constituent for an animal feed comprising particles of a finely divided medicament capable of retaining an electrostatic charge, coated with a non-toxic, water-soluble, surface-active material with humectant and antistatic properties. Feedstuffs containing this constituent and their production are also claimed.—760,193. *American Cyanamid Co.*

Mushroom substrate

A substrate composed of a wood charcoal granular base with an applied cereal-and-water coating and a moisture removing mixture of fine powdered wood charcoal and chalk, and its production.—760,152. *E. B. Speakman.*

Dough preparation

A dough of unbleached and untreated flour (for use in bread baking) is prepared by mixing in a first stage all or nearly all the water and so much flour that a slack dough results, in a mixing machine running at 40-90 r.p.m. until the consistency of the mixture does not substantially change, whereafter in a second stage the remainder of the flour and water is added and the mixing completed with the mixing machine running at the same or a lower speed.—760,044. *British Baking Industries Research Association.*

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WHEN IT CAME TO HORSES the Romans thought more of colour than of form. That is why when Julius Caesar returned in triumph from his second African expedition the chariot in which he drove was, by order of the Senate, drawn by a team of milk-white horses. For the Romans believed that white horses were specially favoured by the gods, and naturally wished to afford their valued leaders every protection under the sun. Today, in industry, the choice of adequate protection—reliable packaging—is no matter of form. It is a serious decision on which the reputation of a firm may well depend. That is why most leading manufacturers favour stout "Fiberite" cases, and crisp, attractive cartons made from "Thames Board". These names are as famous in the world of commerce as those of the goods they protect.

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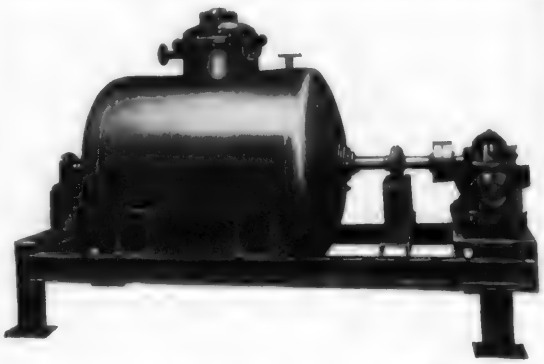

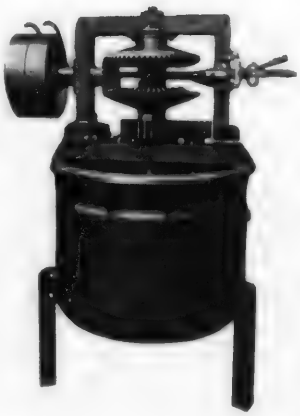

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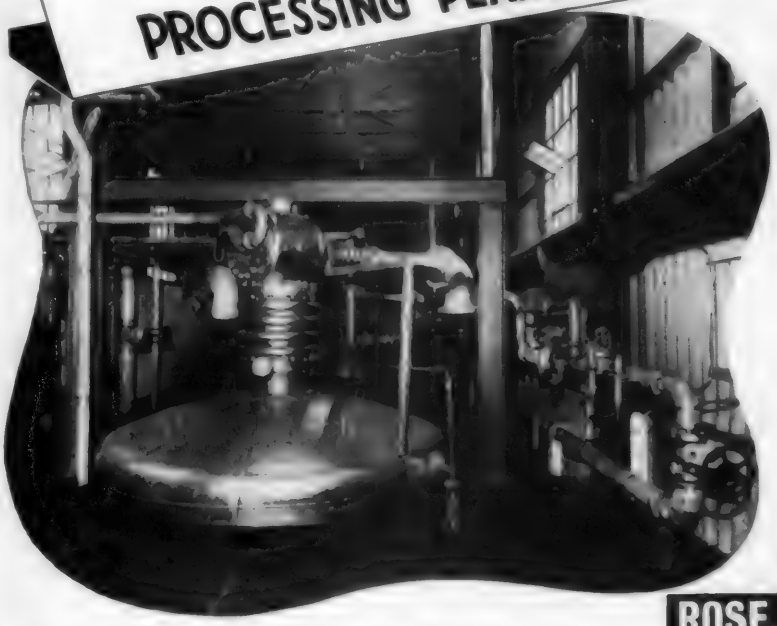

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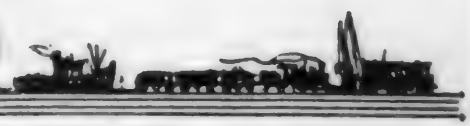

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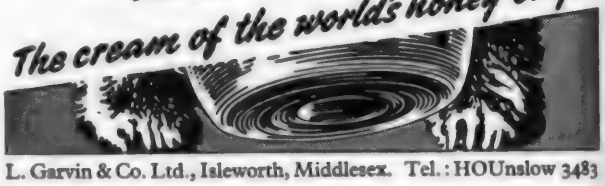

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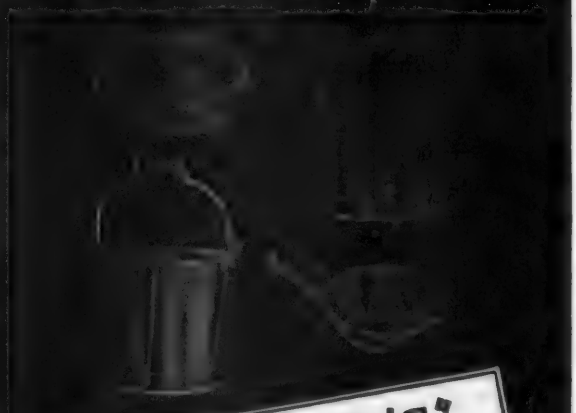

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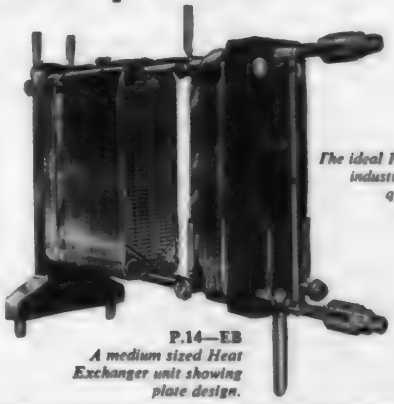

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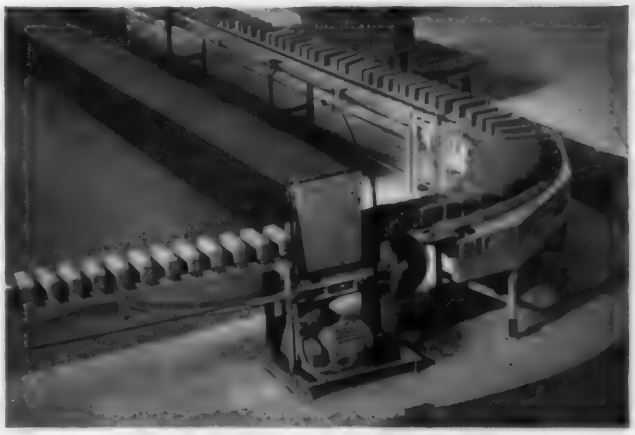

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600

MELANGEUR by Lehmann, 6 ft. diam. cast steel bed and sides 12 in. deep with side outlet. Twin granite rolls 27 in. diam. by 13 in. face, underdriven through crown wheel and pinion. Underneath of pan fitted two-turn 2 in. diam. pancake steam coil. Ploughs and scrapers mounted on cross-head.

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Vert. four-roll Refining Mill by Buhler, steel-cored rolls 29½ in. by 12 in. diam., driven through helical gears by pulleys. Built-in feed hopper at top with fluted feed roll, knife and eccentric lever for engaging. Top roll fluted, others plain.

Triple-roll Inclined Refining Mill by Buhler, steel rolls 31½ in. long by 13¾ in. diam. Water cooled, fitted hand-wheel adjustment. Bottom roll off-set. Feed hopper and 3 in. diam. spiral cutter. Combined tooth flaking bar and doctor knife.

Complete Vacuum Drying Plant by Scott, comprising horizontal band drier, approx. 35 ft. long by 6 ft., with service feed hoppers, shaker feeder, condensate receivers for hot-plates, vacuum augmentor, Kek mill, screening and finished material hoppers, tailing elevator, wet and dry vacuum pumps. Motorised 400/3/50.

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Two Unused Vacuum Drying Ovens by Scott, ribbed c.i. constr., 6 ft. by 4 ft. 3 in. by 4 ft. 10 in. int. with 16 steam coil shelves with 2 in. clearance for trays. Suitable 27/28 in. vacuum, fitted heavy dished door, mounted slide-rail. With Scott horizontal single-cylinder vacuum pump, condenser and fittings.

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Double-trough steam jacketed Mixer by Werner Pfleiderer, stainless steel lined trough 33 in. by 31 in. by 26 in. deep, fully jacketed, twin "Z" blades, double geared, glanded shafts. Hand tilting. Jacket 30 lb. w.p. Driven by 20 h.p. 415/3/50 motor.

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Stainless steel Milk Tank, 36 in. by 28 in. by 13 in. deep, constr. 16G, with radius corners and dairy thread side outlet. Mounted on tubular stand. Removable strainer tank 23 in. by 18 in. by 10 in. deep with perforated bottom having ¼ in. diam. holes.

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(continued in next column)

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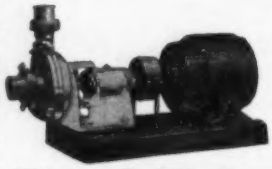

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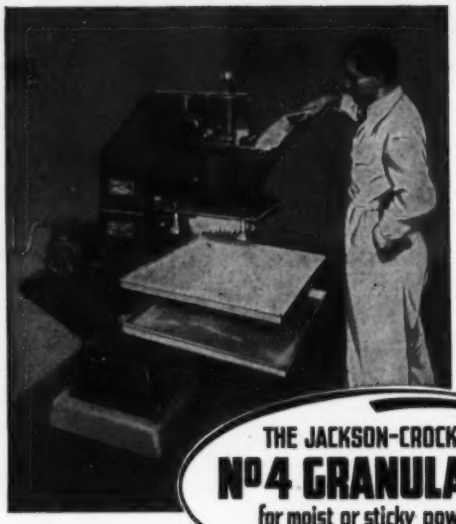

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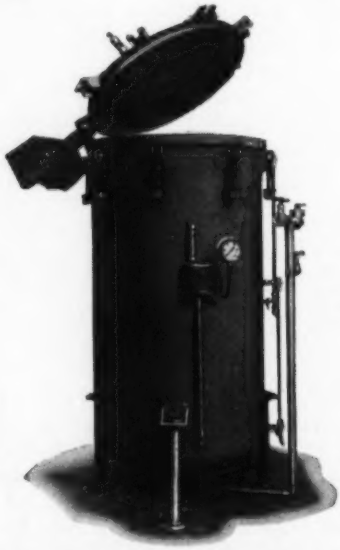

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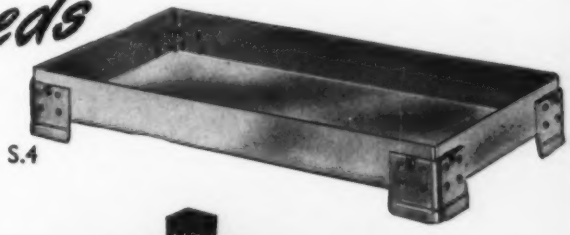

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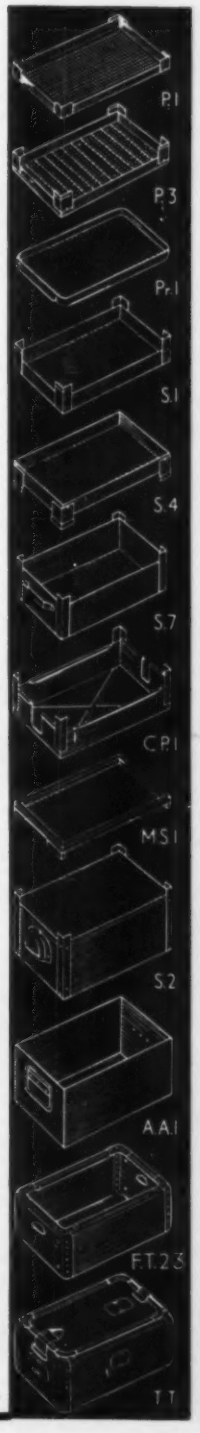

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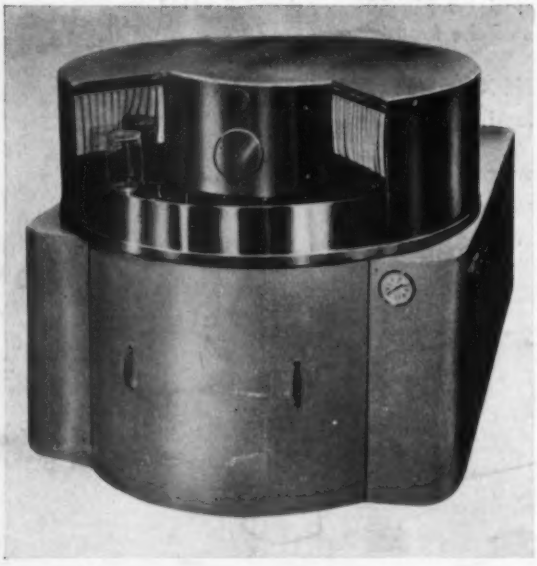

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